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## The Health of the Nation\*

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HEALTH is a relative term, comprehending not merely the physical welfare of man, but also his mental powers, and his moral and spiritual attainments. Hence it would be folly, in the compass of a single address, to attempt a detailed assessment of the health of a nation such as Canada, with its many diversities of climate, race, custom and religion. I shall only try to analyse, against a background of the past, some aspects of the health of the nation today, in such fashion as to invest, with new light and emphasis, certain facts and trends which are in themselves well known to you all.

### THE PAST

We need not dwell unduly on the earliest days, although the national archives contain many relevant references, as is inevitable from the fact that disease haunted the footsteps of the first adventurers from across the sea from the moment they landed on Canadian soil. Indeed, as Heagerty (1) has pointed out, disease has played the master hand in guiding the destiny of our country. "In 1759, the French could muster only 8,000 troops to defend Quebec, largely owing to the ravages of smallpox. Had modern knowledge of epidemic control been available to the French since the earliest days of colonization, the natural increase in the population would have permitted Montcalm to place an army of 50,000 men in the field, and Canada would probably still be French today". Successive shiploads of British and French explorers, traders, missionaries, and soldiers, brought with them, for interchange on foreign soil, the invisible agents of smallpox, typhus, and cholera, so that whole communities of settlers, and

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\*Based on addresses delivered to the Vancouver Institute, November 23, 1940, and to the Victoria Medical Society, May 5, 1941.

whole tribes of the Indians with whom they made friendly or unfriendly contact, were decimated or even wiped out. These great plagues recurred with devastating frequency even up until 60-70 years ago, or within living memory. Patrick Slater has a moving passage in "The Yellow Briar" in which he describes a visitation of "the plague"—probably typhus fever—to Toronto: "As that long summer dragged on, the plague came and hung over the town like the dread intangible wraith that clothes one in a nightmare. There was fear and dread in everyone's heart; and it was the deep smothering fear of utter helplessness. We all wore little bags of camphor about the neck. The angel of death seemed to mark at random the door lintels of the chosen ones. . . ." I am told that in that same city, during the great influenza epidemic of 1918, they again wore little bags of camphor around the neck.

Canada was the scene of numerous cholera epidemics during the nineteenth century. The following letter is of interest both for the sense of other times which its reference to cholera in Canada conveys, and for the up-to-dateness of its allusions to problems of public and professional relations which still beset our Boards of Health today. The letter was addressed to a direct descendant of John Alden, who came to America on the "Mayflower", Felix Alden, Esq., Collector of Canal Tolls, Fort Edward, and is sent from the Comptroller's Office at Albany, New York, under date of June 15th, 1832. It reads:

"Dear Sir;

The Reports of the dreadful scourge called the Asiatic Cholera in a variety of places in Canada has made considerable excitement here, and has called upon our board of health to take such measures as are in their power to stop the importation of this contagion into the state and especially its dissemination in the populous towns where it is most dangerous. in corroboration of their efforts I think it proper to request you to inspect the state and condition, as to health and cleanliness, of the passengers upon the canal boats which pass your office and especially such as appear to be foreign emigrants or from the Canadas. I do not know whether your village is incorporated but if it is you had better confer with the Trustees and get them to designate a physician to make this examination. If it is not incorporated you had better confer with some of your principal inhabitants and with your physicians and determine what you will do on this subject. I am aware you can do nothing authoritatively but much by persuasion and advice with the masters, and by a show of authority as far as you can carry that without personal liability."

Apart from smallpox, typhus, and cholera, the early immigrants to Canada brought with them diphtheria, scarlet fever, and measles, which killed off large numbers of their children, as well as many more of the aboriginals. They brought also tuberculosis, typhoid fever, and syphilis, to destroy in earlier decades of adult life many of those who, by chance, or through an unusual hardiness, had escaped the appalling hazards of infancy and childhood. In those early days, when persons with communicable diseases were nursed side by side with those having other types of sickness, it is not surprising that the Hôtel Dieu was known as the House of Death. Little wonder too that only a century ago the recorded general death rate for Canada averaged 37 annually per 1000 population, roughly four times the present rate; or that at times of major epidemics, such as the smallpox epidemic at Montreal in 1885, the recorded general death rate for

Canada should have exceeded 50 per 1000 population, or more than five times the present rate.

#### THE PRESENT

We would do well to keep in mind that era in Canadian history as a grim retrospect of what our forefathers suffered through ignorance, and of what, through folly, wilfulness, negligence, or just plain complacency, we might have again to face. For although since the early part of the past half century, those large-scale recurrences of cholera, typhus fever, and smallpox have ceased to sweep irresistibly over the Canadian scene, nobody could guarantee that we might not have cholera or typhus again in our midst, while on the Pacific Coast we surely need no reminding that smallpox of most virulent type may spread among the unvaccinated. Incidentally, you are no doubt aware that *P. pestis* infection has been demonstrated among ground squirrels and other rodents in various States across the border, while ground squirrels trapped over an extensive area of Southern Alberta have recently been shown to harbour sylvatic plague. Infected rodents would hardly be held up at the international, or even the inter-provincial, border: indeed, they have probably arrived in British Columbia already. The high flea index among the rat population of Vancouver, reported by Gibbons (2), reveals at least the theoretical possibility that the sylvatic plague of rural rodents might, under certain circumstances, give place to epidemic plague with the urban rat as intermediate host.

For the past half century or so, a great body of knowledge in the field of preventive medicine has been gathered and applied, as a result of which a quiet, but none the less drastic, revolution has taken place in the world's health. This revolution has been carried furthest in Western Europe, Great Britain, North America, Australia and New Zealand: Canada has fully shared in it. None could cavil at the main objectives of the revolutionaries: to prevent disease, to prolong life, and to promote health. None could foresee how well they would succeed, how inevitably their triumphs and failures would give rise to new kinds of problems in disease prevention, or how important would be the social consequences of these changes.

#### *Current Mortality Rates*

Apart from the great plagues already mentioned, the less dramatic but more regular visitations, among young persons especially, of tuberculosis, typhoid fever, and diphtheria, have also diminished remarkably in the last half century, while scarlet fever, measles, whooping cough, the dysenteries, and the pneumonias now represent declining hazards, particularly for the very young. Indeed, to obtain a vivid picture of the trends of incidence of some of these communicable infections, we need not go back half a century, but only two decades, to 1921, which happens to be the first year in which detailed vital statistics began to be published annually for the whole of Canada. Annual reports of the Dominion Bureau of Statistics show that the mortality rate from tuberculosis fell steadily from about 88 to about 52 per 100,000 population during the period 1921-39. Figure 1 shows a striking fall in the typhoid fever mortality rate of from 10 in 1921, to 1.5 in 1939, and also emphasizes the disastrous effect upon the mortality

trend of the 1927 milk-borne epidemic in Montreal, which involved over 5000 persons, of whom 533 died. Figure 2 brings out the even more remarkable fall

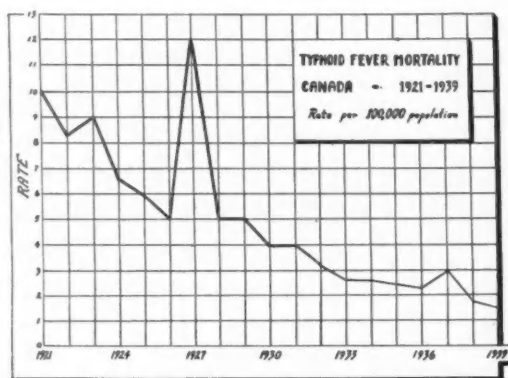


FIG. 1

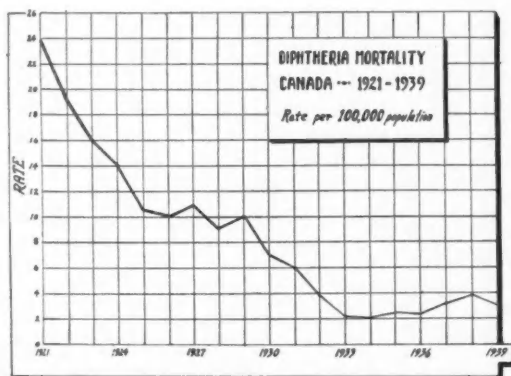


FIG. 2

of from 24 to 3 in the mortality rate from diphtheria in Canada during the same period.\* The tendencies of the past six years for the downward gradient of typhoid fever mortality to level off, and for a reversal to occur in the downward trend of diphtheria mortality, also shown in Figures 1 and 2 respectively, remind us that the final battle against these scourges has not yet been won in Canada. The health of a nation is in fact but the average of the health of its various communities. A defection in, for instance, one Province, not only spoils the record of Canada as a whole, but prolongs and aggravates the hazards faced by more conscientious Provinces. In Ontario, the battle against diphtheria has been fought perhaps more relentlessly and successfully with toxoid than in any similar-sized population group elsewhere in the world. The disease has, in fact, almost ceased to be a cause of death in that Province, and causes only a fraction of the deaths attributed to either scarlet fever or whooping cough, although in recent years Ontario's mortality rates from these two diseases have also shown gratifying reductions. Its capital city, Toronto, with a population of over 750,000, has had not a single case of diphtheria for the past fifteen months. Two other Ontario cities, Hamilton (population approximately 155,000) and Brantford (population approximately 30,000) have had no cases of diphtheria for over seven and ten years respectively, while neither of these cities has had a death from diphtheria for over ten years. The achievements of Ontario could and should hold for all Canada.

The foregoing benefits have been obtained by various methods, ranging from

\*I am indebted to my colleague, Dr. L. E. Ranta, for preparing these two charts.

specific immunization of the individual to provision of safe milk and water supplies for the community—the prevention of each disease requiring the exercise of a separate set of techniques. As a result of accrual of these benefits over a single generation, infant mortality has been halved, and deaths of children under 5 years of age cut by three-quarters; tuberculosis has been demoted from its former rank as “captain of the men of death”, to the position of seventh mate; the order of things from which men die has been so changed that instead of nearly four-fifths of all deaths being from the communicable diseases, this proportion of deaths now occurs from non-communicable diseases; the average life span of a Canadian born today has been extended by 10 years, from 50 to 60; and the distribution of the various age-groups among the general population has been radically altered.

Among the most obvious consequences of this altered age distribution are certain new problems in disease prevention, which clamour for solution today. Perhaps these can best be introduced by reference to Table I, which shows the

TABLE I

THE EIGHT MAJOR CAUSES OF DEATH,  
CANADA, 1939*Rates per 100,000 Population*

1. Diseases of the heart.....	164.1
2. Cancer.....	109.7
3. Diseases of the arteries.....	96.3
4. Accidental and violent deaths..	63.4
5. Pneumonia.....	58.3
6. Nephritis.....	57.8
7. Diseases of early infancy.....	54.6
8. Tuberculosis (all forms).....	52.8

Total Death Rate from Above  
Causes..... 657.0

Total Death Rate from  
All Causes..... 963.4

TABLE II

COMPARISON OF DEATH RATES FROM  
AUTOMOBILE ACCIDENTS AND FROM  
CERTAIN COMMUNICABLE DISEASES*Rates per 100,000 Population,  
British Columbia, 1939*

Whooping cough.....	2.2
Typhoid fever.....	0.5
Cerebrospinal meningitis.....	0.5
Poliomyelitis.....	0.4
Scarlet fever.....	0.3
Smallpox.....	0.1
Measles.....	0.1
Diphtheria.....	0.0
	<u>4.1</u>
Syphilis.....	8.1
General paralysis of the insane.....	3.2
Locomotor ataxia.....	0.1
Total Death Rate from Above Causes.....	<u>15.5</u>
Death Rate from Automobile Accidents.....	<u>15.5</u>

8 chief causes of death for Canada in 1939. The importance of this group of causes is evident from the fact that together they account for 68.2 per cent, or over two-thirds, of all deaths.

*Cardio-Vascular-Renal Diseases*

First and foremost is the problem of diseases of the heart, diseases of the arteries, including cerebral haemorrhage (which appears separately in the Dominion Bureau of Statistics' list of causes of death), and nephritis, which may conveniently be considered together under the one general heading of *cardio-vascular-renal* diseases. This group of diseases accounted for 336 deaths per 100,000 population in Canada during 1939, whereas in 1921 the corresponding figure was 207 per 100,000 population. In 1939, the cardio-vascular-renal diseases were together responsible for three times the number of deaths in the same

year from cancer, and accounted for over one third of all deaths. Of course we must all die when our hearts stop beating, or when a vital artery becomes blocked or ruptured, or when the vascular system in our kidneys is too scarred to function; and since nowadays we enjoy a 10 year-longer average life span than that of our parents' generation, it seems inevitable that more people should die each year from wearing out of the hardest-worked organs in the body. But presumably our various vital tissues, if they come of healthy stock, and have not been differentially picked on by disease, are designed to grow old together, so that we all have a right to die of senility. Yet *senility* was recorded as the cause of death of only 14 persons per 100,000 population in Canada last year, a mere twenty-fourth of the figure for those dying from cardio-vascular-renal diseases. Moreover, nearly one-third of this latter group of deaths occurred between 40 and 60 years, which few would nowadays admit is a particularly senile age.

Rheumatic fever contracted in youth or childhood probably accounts for 25 per cent of all deaths from heart disease, while syphilis, usually of some years' standing, is responsible for another 10-15 per cent of cardio-vascular deaths. Yet another 25 per cent of such deaths are due to degeneration of the heart muscle, from the prolonged effects of acute alcoholism, goitre, and chronic sepsis, or to the delayed consequences of a previous attack of, e.g., diphtheria or typhoid fever. There remains some 35-40 per cent of cardio-vascular-renal deaths, associated with hardening of the arteries and high blood pressure. Many of these arise from scarlet fever, and from foci of sepsis in tonsils, teeth, sinuses, or digestive tract; others from the metabolic disturbances associated with diabetes, obesity, and with faulty diet; and yet others are due to industrial poisonings and dangerous trades. But some deaths in this group are no doubt largely due to the fevered, anxious hustle of the Mars-Moloch-Mammon-worshipping civilization of today.

The cardio-vascular-renal diseases situation may then be summarized by stating that many of the deaths increasingly recorded each year in this category are, paradoxically enough, a consequence of advances made during the past generation in the care and treatment of rheumatic fever, syphilis, diphtheria, goitre, and diabetes, so that persons may now die in early or late middle age of the delayed effects of these conditions upon the heart and arteries, instead of succumbing to the initial attack. In proportion to the success of our efforts at preventing those contributory conditions, some diminution in premature deaths from cardio-vascular-renal diseases may be expected; while such deaths in this group as are due to early and selective degeneration of the tissues of the circulatory system, whether arising from dietetic excesses or deficiencies, from chronic focal infection, or from over-stimulation of our endocrine glands by the lack of quiet in our time, may be prevented, or at least postponed, to whatever extent we may learn to avoid these predisposing factors. Finally, it should be pointed out that while, as the years pass, we may expect some diminution in recorded deaths from degenerations of the circulatory system in the age groups 40-60 years, the total death rate from these causes will probably continue to mount. Indeed, unless senility becomes more popular as a certifiable cause of death, which seems unlikely, a mounting death rate from heart disease in the decades *beyond 60* should be regarded as a gratifying index of further progress



in disease prevention,—as an expression simply of man's increasing tendency to survive until his circulatory system gives out.

### *Cancer*

You will expect me to say something about cancer, which, like the cardiovascular-renal diseases, is unquestionably increasing as a cause of death. The rise in the recorded death rate from this disease in Canada (as in Great Britain and the United States), has in recent years been steady and inexorable: a fact which when played up, as it has been, without due analysis, adds to the ranks of the cancerophobes, without doing much to lessen the incidence of cancer itself. The mortality rate from cancer per 100,000 population in Canada increased from nearly 70 in 1921, to nearly 110 in 1939. But there is as yet no definite evidence that human tissues between 45 and 60 years old are any more liable today than they were a generation, or even a century, ago, to cancerous indiscipline of growth. In fact, it seems probable that the increases in the recorded mortality rates from cancer are due, for example, to better diagnostic methods; to improving control over other causes of death in the decades of maximum cancer incidence; to certain regulations relating to certification of causes of death, whereby cancer, if present, is given priority; and especially, to the increased expectation of life, so that more persons nowadays survive to an age when their tissues are prone to this disease.

The influence of the age factor in determining the incidence of cancer in a community is well illustrated by the differences in the 1939 death rate from cancer in the two Provinces of British Columbia and Saskatchewan. Whereas in our own Province the death rate from cancer of about 135 per 100,000 population was considerably above the Canadian average of around 110, in Saskatchewan the provincial death rate from this disease was under 80 per 100,000. Some of our local faddists ascribe this unfavourable showing to our climate, and for once they are right. But it is not some subtle malignity of rain, fog, or even wind, which is to blame: quite the contrary. Our population is, unhappily for our health records, and also for our public finances, overweighted with the aged and the ailing. We are subject to annual influxes of retired people who enter the Province at an age of heavy predisposition to cancer (and of course, to other degenerative diseases); or who endure the rigours of the prairie until some condition such as cancer develops, when they come to the Coast to die.

The cancer problem is serious enough, especially since quite young people sometimes die of this disease, while among the middle-aged its incidence is relatively high; but we must rid our minds of any kind of hysterical or superstitious approach to it. While my own view is that many years are likely to pass before we have a specific preventive agent for cancer, still less a certain means of cure for the advanced disease, there is encouragement in the thought that much is already known of its predisposing causes, the avoidance and removal of which will prevent or defer the development of the disease to an increasing extent. Moreover, surgical removal, or irradiation by X-rays or radium, or some combination of these, offers a good likelihood of cure in a high proportion of cancers, particularly those of certain sites, and especially when treated early. But the

curve of cancer incidence will not turn downward until more people realize that cancer never begins in a healthy tissue, know what may be the premonitory signs or symptoms of cancer, and learn to seek proper advice as soon as suspicions are aroused; and until facilities are set up under State auspices for microscopic examination of suspicious biopsy tissue, with an expert pathologist's opinion available at nominal cost, or even free of charge.

### *Accidental and Violent Deaths*

Referring again to the list of the 8 chief causes of death, we next find accidental and violent deaths. The threat of violent death through the various hazards of war is of course a dominant theme in the life of most of the world today, but even in peace-time, accidental and violent deaths have been steadily increasing. Accidents involving industry, the home, and automobiles, with drowning, suicide and homicide, account for by far the greater part of this melancholy group of deaths. Workmen's Compensation Acts have gone some way towards inducing employers concerned with the more dangerous industries and trades to provide measures of protection for their employees; but much remains to be done in this regard. Further, it should be remembered that the mere making of a disease or injury subject to compensation does nothing in itself towards reducing foolhardiness among the workers. Home accidents are largely due to overcrowding, to simple carelessness, or—where children are involved—to lack of parental supervision. Of accidental drownings I shall say no more than to deplore the fact that they represent a waste of usually young and vigorous life, and to note that British Columbia's death rate from this cause is the highest in Canada. This high rate may of course be due to the fact that per person we have more water to drown in than the other Provinces. But a similar kind of argument will hardly serve to explain our higher-than-average provincial death rate from automobile accidents. Table II will perhaps serve to bring home the appalling toll levied by the God of Speed. Admittedly, 1939 was an unusually fortunate year for this Province in respect of fatalities from the group of communicable diseases listed in the table, while we know that by no means all deaths from syphilis were recorded as such; but the general purport of the table is correct for any recent year for all of Canada,—with the exception of Quebec, where deaths still occur nearly three times as frequently from the diseases listed as from auto accidents, owing to the higher than average incidence of these diseases, and the lower than average incidence of motor cars, in that Province. Since 1921, the annual death rate in Canada from auto accidents has risen from 3 to 14 per 100,000 population, or by 450 per cent. For every motor fatality, there are at least 17 persons injured. The economic and social consequences of violent and accidental deaths as a group are especially heavy, for they come first or second as causes of death in all five decades of the age period 1-49 years, while male deaths of this type outnumber female by three to one.

### *Pneumonia*

The next major cause of death is pneumonia, which killed 30 per cent more persons in Canada in 1939 than did pulmonary tuberculosis, its runner-up as a

cause of death among the communicable diseases. While wider recognition of the droplet-borne nature of pneumonia should reduce its future incidence, there are also grounds for some optimism in connection with actual cases of this disease. Increasingly intelligent use of drugs of the sulphonamide group, either alone or in conjunction with specific antisera, makes it not unreasonable to hope that the death rate for pneumonia may be notably reduced over the next few years.

#### RECAPITULATION

Before leaving this question of the things from which nowadays we die, a few words of recapitulation, covering the health trends of the past half century, may seem timely. First, there were those vast changes wrought in the health of the nation in the quarter century 1890-1914, stretching from the time of the great early discoveries in bacteriology by Pasteur, Koch, and their associates, to the outbreak of the first World War, which resulted in the annual general death rate in Canada falling from around 35 to about 12 per 1000 population. During this period, through a broadening application of certain fundamental principles of community hygiene, especially in the provision of safer water and milk supplies, of better means of sewage and garbage disposal, and to a lesser extent by the provision of a few specific agents such as smallpox vaccine and diphtheria antitoxin, so many lives began to be spared from epidemic conditions (particularly the lives of children and young people) that the rate at which human life passed out of circulation in Canada was in 1914 only one-third the corresponding rate in 1890, a mere 25 years before. Then there followed another quarter century, 1915-1939, which brings us to the outbreak of the second World War. This period saw a further harvesting of the benefits to be gained from community hygiene; from a growing awareness by the individual of his responsibility to his neighbour, as well as to himself, in the observance of personal hygiene; and from the emergence of an increasing body of knowledge and techniques bearing on the use of serums, vaccines, toxoids, vitamins, and endocrine products—a great galaxy of the so-called “specific biological products”. All this resulted in a further protection of many infants, children, and young people from untimely death, so that they stayed in circulation. But by this time, many of those whose lives had been prolonged by medical science during that first period had grown old enough to die of the degenerative diseases we discussed just now; and they have been passing from circulation—worn-out and damaged coin—at a rate which is alarming until the reason for it is analyzed. Such factors as these account for the paradox that whereas the average expectation of life *at birth* today is around 60 years, as compared with only around 35 years at the time of the capture of Quebec, yet the average expectation of life *at age 50 or over* is nowadays actually somewhat less than it was in the days of Wolfe and Montcalm.

At first sight, another paradox is presented by the fact that although the average life span is now 10 years longer than it was in 1915, the fall in the total death rate over the past 25 years has been rather insignificant, the actual figures for Canada at the beginning and end of this period being 10.9 and 9.7 per 1000

respectively. But this simply means that in recent years the rate at which we have been saving the lives of our youngsters has barely exceeded the rate of postponed deaths among our oldsters. Fairly soon, the general death rate curve will probably flatten out, and from time to time during the next decade or two is liable to show an upward slant, quite apart from the inevitable effects of war upon it.

#### THE AGING POPULATION

Of greater importance than these slight fluctuations in death rates is the marked decline in birth rates, from 26.8 in 1915, or 29.3 in 1921, to 20.3 in 1939. This declining birth rate is due to a variety of causes, which one need not attempt to analyze on this occasion. The significant point is that the birth rate has been falling more rapidly than the death rate, so that the rate of natural increase in the population has been steadily declining. While the war has already brought about a brisk rise in the birth rate, it will do the same to the death rate. I do not suggest for a moment that the correction of this national trend towards a stationary population is not within our power, but we would do well to take warning from the fate of France, whose birth rate curve in recent years had fallen below its death rate curve, so that her rate of natural increase in population was a negative quantity. You will remember that one of the reasons Marshal Pétain gave to his countrymen for their downfall was "Too few babies". The dictators of course know the importance of babies, and give bonuses to mothers for producing them; but apart from the fact that the dictators want these babies produced for quite ulterior objectives, the bonus system is intrinsically bad, because it encourages the poor, the feckless, and the irresponsible to breed merely for the sake of the bonus. A much sounder system eugenically, if not fiscally, would be a reduced income tax exemption allowance to childless couples, and much larger exemptions than at present for each child in the family; thus providing greater encouragement to the faint-hearted with taxable salaries to catch up with the undaunted proliferation of the indigent.

Irrespective of the time taken for the rate of natural increase in our population to approach zero, so long as it continues to decline, and so long as the present trend towards an increasing life span is maintained, the average age of the population must continue to rise. As someone has pointed out, in the United States, at present rates, "By 1975, the population 20-44 years of age will have increased by only 6 per cent; but the population 45-64 years of age will have increased by about 70 per cent". The United States Public Health Service has recently given official recognition to the growing significance of "senescent individuals" in the national life and economy by establishing a Unit of Gerontology at the National Institute of Health, one of whose chief objectives will be "to augment the health and vigour of those past the meridian" (3).

In the absence of a heavy tide of immigration, heavy enough to outweigh the selective action of wartime fatalities upon the younger age groups, and if present rates hold, Canada also faces the issues involved by an aging population. From almost any standpoint, the character of a nation whose young people are

greatly outnumbered by the middle-aged and the old, would be grim enough. The cleavage between the attitudes and aspirations of old and young would become more conspicuous; ambitious youths would have to stifle their yearning for promotion yet more firmly because the claims of so many older than themselves must first be met; while the cost to the community of supporting its pensioners,—taking, like King Charles II, an unconscionable time to die—would steadily mount. We do not need to enlarge upon these insufficiently-appreciated social consequences of our having learned how to prolong life better than how to ensure that it shall be abundant. But purely from the health standpoint, a continuance of present trends carries appalling implications, to which some reference must now be made.

#### CURRENT MORBIDITY RATES

Hitherto, we have been discussing some of the major causes of death today: partly because it is still death itself, rather than mere disease, that most people want to avoid; partly because specific *mortality* rates, while by no means free from statistical errors, are far more reliable than specific *morbidity* rates; and partly because mortality rates afford in themselves very fair clues to the incidence of the diseases concerned. We cannot attempt any detailed analysis of the present situation in respect of disease incidence in Canada, but a few features are noteworthy.

Since cardio-vascular-renal diseases hold so prominent a place among causes of death, it is hardly surprising that 2 per cent of the total population (or nearly 4 per cent of the population over 45 years of age), are suffering various degrees of impairment of their lives from these conditions. Again, since the number of *cancer* cases in any given community is believed to lie between 4 and 5-fold the number of cancer deaths recorded during the year, it may be calculated that roughly 1 per cent of the population over 30 years of age is suffering from cancer. As for *tuberculosis*, about 1 per cent of the total population in Canada probably suffers from some form of this disease. The present incidence of that other chronic infection, *syphilis*, is rather uncertain, but one cannot doubt that 1 per cent of the general population with this disease would be a minimum figure. We may then say with a fair measure of confidence that among every 100 persons in any group representative of the general population of Canada, there would be no less than 6 suffering from the effects of cardio-vascular-renal diseases, cancer, tuberculosis, or syphilis.

To that 6 per cent of the population suffering from definite and specific diseases, must be added at least a like percentage of persons who, to varying degrees, are rheumatic, asthmatic, bronchitic, dyspeptic or neurotic. A study in chronic disease incidence among industrial workers, carried out within the last few years in the United States (4), showed that no less than 87 per cent of persons in the working age period (15-64 years) reported having some chronic ailment, as a result of which every male employee lost each year an average of 7½ working days, and every female employee an average of 11 working days. These figures reveal a situation which would be serious enough even if it related to the old age

groups; but this was far from the case. For one-half of the industrial population reporting these chronic diseases was under 45 years of age.

A generation ago, Canada received a big awakening in respect of its national health (as did Great Britain) when it was realized how high a proportion of men called for enlistment proved medically unfit to bear arms. But we had all confidently expected that the effects of 25 years of applied medical science and public health endeavour would be reflected in a greatly improved physique and health status among young men called up now for military training. To a notable extent our expectations have been fulfilled, but it was disconcerting to many of us to read that of 27,600 men called for the first military training class in October, 1940, all in the age group 21-23, over 7 per cent were rejected by military doctors after civilian medical practitioners had already weeded out the worst specimens. Hernia, eye conditions, respiratory troubles, ear troubles, heart troubles, and urethritis (presumably a euphemism for gonorrhoea), were reported to account for more than half of these rejections. A more recent Canadian Press despatch from Ottawa stated that of nearly 200,000 applicants for enlistment in the Canadian army, 20 per cent were rejected as unfit. While this percentage of rejections is only one-half the corresponding figure of a generation ago, it is still lamentably high. Such findings assume a forbidding aspect for the community if we are indeed to expect that 35 years from now, there will have been a 70 per cent increase in the population between the ages 45 and 64 years. As the contemporary generation of young persons reaches middle age, their invalidisms are likely to entail an intolerable burden for the community. The burden is of course already excessive. Our hospitals are overflowing, to a large extent with the chronically ill, many of whom have to be rendered medical services at community expense; our provincial health services are overtaxed; mental hospitals cannot accommodate nearly all who should be in them; while even when the nation's cry for all hands to work has absorbed most of the unemployed, there will remain a hard core of *unemployables*, who are so because of physical or mental deficiency. Our press and our politicians are too prone to flatter the community, and to obscure the true state of affairs, by trumpeting around, with a fine brassy optimism, all the favourable features of current events. While I would not want you to look back upon this paper as a dismal jeremiad, I feel sure you would agree there are some very sombre features about the present state of the national health, which should lead us all to seek, with "the light that is in our minds", what might be done to improve the prospect.

#### *Mental Disease*

May I here interject a few comments on the dark and sinister problem of *mental disease*, the problem of those in whom the light of the mind has gone out, or gleams but fitfully. In 1937, there were roughly 55,000 patients in the mental hospitals of Canada, or 1 in every 200 of the general population. In addition, if surveys conducted in the United States are applicable to Canada (and there is no reason to suppose they are not), 1 in 22 of the population exhibit definite signs of mental deviation. Nearly 10 per cent of those in mental hospitals have syphilis, and most of these are there because of it. Others are old people, whose



minds have worn out at the end of a long, hard life, and who exemplify, like many of the victims of cardio-vascular-renal disease and cancer, another consequence of the lengthening average life span. But large numbers of the insane are young people, schizophrenics, recruited from the ranks of those whose powers of adaptation and of self-discipline do not measure up to the demands of society upon them, and who withal are emotionally of unstable stock. From those ranks come both the rebels, who break windows, conventions, and their mothers' hearts, and are sent to prison; and the schizophrenics, who break the cords which tie them to reality, and pass their lives of phantasy in asylums. As you know, not all of them are irredeemable; but in mental disease, as in all other kinds of disease, prevention is so much easier, cheaper, and in every way better than cure. Prevention will, I suppose, entail more widespread appreciation of the responsibilities of parenthood, before mating rather than after; more concern for the equality of human stock rather than mere obsession with its quantity; more purposive parental care during the earliest years of life; a better understanding and wider practice of the principles of mental hygiene during the school years; and a more thoughtful guidance and kindly appraisal of the emotions which disturb the heart and mind of the adolescent. No doubt all those things are being added slowly to our community life. But recent years have been, and the years to come will be, especially hard for young people, and there is need for sound and resolute action if misery and wastage of this kind is to be reduced. We should never forget how precious, in the light of those population trends we have discussed, is every young life to the nation today.

Although reluctant, perhaps rightly, to admit it in their hearing, many of us have not only sympathy but even admiration for the present-day adolescent, and wonder not why so many fall mentally and emotionally ill, but rather how so many remain honest, healthy and strong. For through the eyes of any percipient youth, the current human scene must often appear well defined by that somewhat facetious answer to the question: "What is sanity?" . . . "Sanity is a capacity for being dextrous in the matter of keeping out of insane asylums." Our young men and women are nowadays called upon to resolve many inner conflicts, perhaps never more sharply pointed than at present. How to reconcile the urge to "live dangerously" with the doctrine of "safety first"; how to be quiet and unaggressive in the face of overwhelming evidence against its being this earth which the meek shall inherit; how to have faith, even in themselves, in an age of debunking; how to guide their footsteps along a *via media* between the tranquil scepticism of, for instance, Thomas Hardy's couplet:

"I do not ask thee much, Life, overmuch,  
Just neutral-tinted haps and such". . . .

and the sense of awareness of the Kingdom of Heaven on earth portrayed by that lovable mystic, Francis Thompson:

"The angels keep their ancient places;—  
Turn but a stone, and start a wing!  
'Tis ye, 'tis your estranged faces,  
That miss the many-splendoured thing". . . .

I would therefore solicit a touch of special friendliness for the young person who is "different"—who does not conform to the rather dreary normality which the ubiquitous stimuli from radio, films, press (and especially the funnies) tend to impose upon us. Young people who think and act differently from their fellows, provided they do not pose in thought, or act antisocially, should be encouraged and not mocked. If mocked, they make good material for schizophrenia; if encouraged, it is from among them that our future prophets and leaders may come. Who can doubt that we shall need many such prophets and leaders in the years ahead? Prophets,—ready if need be to feed again on locusts and wild honey, even though this be admittedly not a well-balanced diet, at least in temperate climes. And leaders of public opinion who are not so called because they talk loudest, and run fastest before the wind; who are not yes-men, but who, having pondered community problems clearly and honestly, are ready to declare themselves with incisiveness and courage.

#### THE FUTURE

Many of you have no doubt sometimes wondered, as I have, whether this prolonging of the life span has after all been a very worth-while achievement, when so large a proportion of the population is condemned to lead a life which, at least in respect of health, is clearly far from abundant. But none can dispute, on any sound basis, the right of a potentially healthy infant, once born, to be kept as far as possible healthy, until it reaches an age when it is presumed to be able to safeguard its own health. It is precisely this objective which has met with a gratifying measure of success; for, apart from public health legislation, which seeks to protect, through isolation and proper sanitation, *all* members of the community from epidemics, the preventive aspects of medicine have been practised almost exclusively upon the infant, the pre-school, and the school child. The available public funds have not sufficed to ensure adequate services even to these groups, so that many preventable deaths, especially among infants, still occur. In Canada, only in respect of tuberculosis and venereal disease, and then under serious limitations, are techniques of preventive medicine applied at public expense to adults and adolescents. For the many other diseases of adult life, the sufferer must go to his physician, who is obliged to retail that commodity which the adult public chiefly seeks, namely curative or palliative medicine. The many difficulties in the way of reorganizing the practice of medicine so that preventive services may be available to all age groups, would indeed be formidable; but must, I think, fairly soon be faced. Meanwhile there is a growing clamour for arrangements covering the *treatment* of sickness on an insurance basis. To the many such schemes already operating, on comparatively small scales, in various parts of Canada, the term "health insurance" has been applied. Perhaps a more descriptive term for such schemes would be "treatment, or prescription, insurance". For, so long as the chief benefits insured are the right of an already sick person to receive medical care from the doctor of his choice, the visit is bound to be made too late for true prevention. Of course, there are preventive aspects to any system which helps to bring together doctor and patient, on a friendly and economically-equitable basis, in the earlier phases of disease develop-

ment. But under such systems, improvements brought about in the national health must be slow of realization, until the physician becomes, to a far greater degree than at present, teacher as well as practitioner; while the day must be long deferred when the physician, with his helpers, will be a sort of sculptor, as R. M. Baker suggested several years ago in a little book entitled "The Doctor of the Future", armed with knowledge of every influence of known potency over the human body and spirit—who, wielding hammer and chisel, will look upon his handiwork, like Pygmalion upon Galatea, and see, "not disease and death, but the glowing lineaments of life".

How then should we proceed if we seek more rapid improvement in the health of the nation? By diverting present efforts of public health organizations from the younger age groups to the older age groups? The consequences of such a diversion would be prompt and tragic. For the price of maintaining current achievements in disease prevention among the young is eternal vigilance, and we need higher rather than lower appropriations to ensure maintenance even of the present standards. We cannot abandon the helpless child for the parent who has so often lost his or her health through ignorance, folly, or apathy.

Then must we turn to further research? Of course continued research is essential. Research into the obscure causes, and into methods of prevention and cure of chronic infections; into means of improving current measures for the control of the acute communicable diseases; into new problems raised by recent discoveries of the part played by various animals acting as reservoirs for micro-organisms capable of infecting man; into the possibility of known micro-organisms changing their former habits of parasitism and giving rise to hitherto unknown types of human disease; into a hundred and one other matters of like importance . . . That such investigations should cease is unthinkable. But this is the crux of the matter: that if no further research in the whole broad field of medical science were carried out from this day onward, the fullest use of current knowledge, with the eager and informed cooperation of the public, could soon bring about almost unimaginable improvements in the health of this nation. In other words, there is already a vast surplus of knowledge awaiting absorption and application to the betterment of the health of mankind.

At this stage in the evening's proceedings, you will neither expect nor wish me to attempt an analysis of the various factors which deny to the many the harvest whose seed was sown by the few. Those factors run the whole gamut of the failings of human society. Time permits only a brief allusion to a few of them.

Let us take, for instance, the question of economic obstacles, which are so often claimed, with some truth, to stand in the way of better national health. The fact that the particular one-third of the citizens of the United States who stand most in need of medical care, should have been shown to be quite unable to pay for it, is indeed an indictment of our present maldistribution of essential services; but the fact that one-third of the automobiles in the United States should be operated by persons earning less than \$20.00 weekly is just as plain an indictment of our perverse conceptions of a high standard of living, of our current faulty scales of values.

False scales of values must of course be corrected not only by mental, but also by emotional, discipline; and this applies to both the individual and the community. God forbid that either as individuals, or as a community, we should purge ourselves of pity, but is there not too much sentiment wasted upon the less worthy elements in society? Are we, for instance, going sensibly about the business of bringing about further improvements in the public health, by condemning a body of skilled laboratory workers to carry out procedures of vital importance in overcrowded, unsafe, unsightly, unhealthy and in every way unsuitable quarters, while we spend our funds on beauty parlors in mental hospitals, or on a new wing to a women's gaol designed to convey to the inmates, according to the press, "the atmosphere of a club"?

Or again, as an example of another kind of difficulty in our way, take the question of the control of tuberculosis. In no place has better work been done to reduce its incidence than in our own Province. Yet in recent years our total mortality from this disease has shown comparatively little decline. One of the main reasons is that the Indian and Oriental groups, which together comprise less than one-tenth of our Provincial population, account for nearly one-half the total cases of tuberculosis (5). Until their racial habits and economic status are radically changed (and it is not the particular job of health officials to do that, although such things are often expected of us), we shall find our tuberculosis problem with us for many a year to come.

Weaknesses in our general social fabric likewise contribute to the problem of venereal disease. It has long been known that professional prostitution was responsible for a high proportion of cases of syphilis and gonorrhoea. This has been demonstrated most convincingly in this Province (6), where sound, courageous, and it seems fair to claim, successful efforts have been made to reduce both the incidence of prostitution and of venereal disease. Although the history of prostitution may suggest that attempts at suppression are likely to fail, we should not withhold our applause and support from those who are ready to try again, but rather from those who have neither administered nor interpreted the law respecting prostitution.

One might multiply examples, but perhaps enough has been said to bring home two all-important points. First, that the public health worker, whether pioneer, practitioner, or teacher, has changed the potentialities and composition of society to a quite unexpected, and in fact unrealized degree; and secondly, that we are fast approaching the time when, without the whole-hearted and understanding cooperation of every individual, we who are engaged, in one capacity or another, in the task of health improvement, can hope to do little more than maintain the *status quo*. On the other hand, *with* such whole-hearted and understanding cooperation from every individual, premature deaths from heart disease, and deaths from cancer, would greatly diminish. Current knowledge of dietetics, of endocrinology, and of mental hygiene, would suffice not only to prevent much chronic disease, but also to raise the mental and physical health of the whole community to a higher and more vigorous level. The practice of even the rudiments of eugenics would cause the hereditary diseases to vanish, and the hereditary tendencies (e.g. to allergy, and to early degenerations of the tissues)

to be diluted; while if we did but give to the problems of improving the human stock, some larger fraction of the care we now bestow upon the breeding of our domestic animals, many of those pathetic examples of hasty and haphazard experiments in casual union and miscegenation would disappear from our streets. If proper sewage disposal, and safe water and milk supplies were available to all, and if we all washed our hands thoroughly before preparing or partaking of food, we would neither give nor get typhoid or paratyphoid fevers, or dysentery. If we never spat, shouted, nor openly coughed or sneezed in crowded and ill-ventilated indoor places, we would rarely give or get pulmonary tuberculosis, pneumonia, influenza, the common cold, or any other of that large group of droplet-borne infections. If we always drank pasteurized milk, we would avoid undulant fever. If men never consorted with prostitutes, our chances of acquiring or conveying syphilis and gonorrhoea would be very much reduced. If no Moslem pilgrimaged to Mecca, cholera would stay in the Ganges Valley; and if no Hindu ever washed himself in that holy river, cholera would begin to vanish from Bengal. Finally, if the world desisted from wars, there would be no threats of pandemic typhus fever, influenza, and other plagues, and no recrudescences of venereal disease, tuberculosis, or gross nutritional deficiencies. In other words, what is needed is first, sound understanding, and then careful self-discipline by the individual for the sake of his own and his neighbours' health: if you will, a higher development in our understanding of yet another application of democratic principles to community life.

Meanwhile, we must spurn the temptation to discouragement as we measure our efforts to prolong the human life span against the indiscriminate slaughter of war. For even although the techniques of preventive medicine are subject to revision, and its accomplishments to interruption, its principles and objectives remain imperishable. Nor should we hesitate to proclaim and maintain our beliefs and our hopes; bearing in mind that after the great wind, and the earthquake, and the fire, came the still small voice. As it was then, so it will one day be again. And we do right to trust that even in the midst of the storm, some quiet whisperings of the spirit of preparedness against all things evil may gather strength and grow honoured among men, until in due time the health of a nation may come to be looked upon as its greatest treasure, its highest privilege, and its chief security.

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# The Occurrence of Diphtheria in Halifax from October 1, 1940 to January 31, 1941

## Interim Report to the Dominion Council of Health\*

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IN the autumn of 1940 an outbreak of diphtheria which presented some unusual features occurred in the City of Halifax and environs, whence it spread to other parts of the province. I therefore thought it might be of some interest to members of the Dominion Council of Health to give a brief account of some of our experiences with this disease during its period of greatest prevalence, namely from October 1, 1940 to January 31, 1941. No attempt will be made to give an exhaustive account of what took place, largely for the reason that all the information has not yet been brought together. Our medical health officers are still analysing and studying their individual findings and when these are consolidated there will be made available, we believe, a valuable contribution to our present knowledge respecting diphtheria.

The 1931 census population of Nova Scotia was 512,846. The estimated population for the year 1939 was 554,000. Just what the present population is no one can tell with certainty but it is without doubt very considerably higher than the last corrected population would indicate. For example, the normal population of Halifax is about 68,000. Those who consider themselves authorities on the subject estimate the present population to be 90,000. In several other sections of the province there is a corresponding increase.

More than the ordinary number of cases of diphtheria began to appear in Halifax and its environs during the latter half of September. We then began to suspect that we were destined to have considerable trouble with this disease. As a matter of fact, with the advent of war and the tremendous increase in shipping and movement generally, we realized that we were made more vulnerable to infections of all kinds. The constant shifting of a considerable proportion of the population and other wartime conditions are factors which should be given due consideration. Because of rapid communication between provincial points, at this time, an outbreak of any communicable disease in one centre endangers others. The incidence of diphtheria rose fairly sharply and reached its peak in the month of November 1940. During December it declined considerably but began to rise again early in January 1941, to another peak, which peak was lower than that in November. Some are of the opinion that the January rise followed as a consequence the holiday season when there was very much greater mixing of the population than usual and entertaining

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of the National Defence personnel in private homes. This may or may not have been the cause.

The appearance of an unusual number of cases of diphtheria naturally led to a more complete mobilization of the health forces in an endeavour to prevent its spread. The Honourable Minister of Health called together all interested persons and the whole situation was reviewed. In drafting plans for control, due consideration was given the necessity of wartime movements and the importance of non-interference with National Defence effort. In Halifax city the Commissioner of Health and his staff took over the work of prevention. The Medical Society was appealed to for cooperation and extra immunization clinics were opened in order that all might be given the protection afforded by toxoid independent of their ability to pay. Through leaflets and newspaper advertisements and releases the importance of adequate protection was brought to the attention of every householder. Throughout the rest of the province the Department's divisional officers assisted by the staff public health nurses took charge of the situation. Here organization was projected through the local health officers and practising physicians, who responded nobly. Hundreds upon hundreds of clinics were operated in schools and other places with satisfactory results. It is no exaggeration to say that during this time our laboratory was inundated. The staff worked day and often night as well. We are indebted to the Department of Pensions and National Health for sending some much needed assistance. Dr. G. D. W. Cameron, Chief of the Laboratory of Hygiene, Ottawa, and Mr. James Gibbard, Senior Bacteriologist, came to our aid at a difficult period. Their material aid and moral support were much appreciated.

The deaths from diphtheria in Nova Scotia by counties and ages in the five-year period 1935 to 1939 are shown in tables 1 and 2.

TABLE 1  
DEATHS FROM DIPHTHERIA IN NOVA SCOTIA BY COUNTIES, 1935-1939

Year	Total	Annapolis	Antigonish	Cape Breton	Colchester	Cumberland	Digby	Guysboro	Halifax (all in City of Halifax)	Hants	Inverness	Kings	Lunenburg	Pictou	Queens	Richmond	Shelburne	Victoria	Yarmouth
1935	M. 5 F. 6			10					1										
1936	M. 6 F. 11			9			2		6										
1937	M. 5 F. 6			5					5			1							
1938	M. 11 F. 12			13		2			4			1							3
1939	M. 5 F. 10			7					5							1	1		1
	77			44		2	2		21			2				1	1		4

TABLE 2  
DIPHTHERIA DEATHS BY AGE IN NOVA SCOTIA, 1935 TO 1939

Year	Total	Under 1 year	1 year	2 years	3 years	4 years	5 to 9 years	10 to 14 years	15 to 19 years	20 to 24 years	25 to 29 years	30 to 34 years	35 to 39 years	40 to 44 years	45 to 49 years	50 to 54 years	55 to 59 years	60 to 64 years	65 to 69 years	70 to 74 years	75 to 79 years	80 to 84 years	85 to 89 years	90 to 94 years	95 to 99 years	100 years
1935	M. 5 F. 6	2	1		2		4	1	1																	
1936	M. 6 F. 11	1	1	3		1	8	1	2																	
1937	M. 5 F. 6	1	1	1		1	4	2						1												
1938	M. 11 F. 12	2	4		3	1	5	5	2	1																
1939	M. 5 F. 10	1			2	1	3	2	1		1							1	2	1						
	77	7	7	4	7	4	24	11	6	1	1	1	1	1	1	1	2	1								

From 1935 to 1939, 77 deaths occurred. Eight of the eighteen counties with approximately 62 per cent of the provincial population contributed to the mortality. Forty-four of the deaths were in Cape Breton county and 21 in Halifax county. Of the deaths, 69 per cent were in children under 10 years of age and 38 per cent in children 4 years of age and under. All of the Halifax deaths were in the City of Halifax. In 1938, 1939 and 1940 a vigorous toxoiding program was in progress in Cape Breton county, with a negligible mortality rate for the year 1940.

During the four-month period beginning October 1, 1940, and ending January 31, 1941, 326 civilian cases were notified in the Halifax area and 95 in the rest of the province. Of the 326 cases, 42 were reported in October, 148 in November, 50 in December, and 86 in January; and of the 95 cases, 25 were reported in October, 30 in November, 11 in December, and 29 in January.

In the same four months 178 additional persons suffering from diphtheria were admitted to Rockhead Hospital. These were from National Defence Forces, with the exception of a few from the Merchant Marine. Six others were cared for in outlying isolation sections of the armed forces.

During the four-month period here reviewed, 14 deaths occurred in the civil population of Halifax city and its environs and 9 in the rest of the province. Ages at death of the 23 are presented in table 3.

In the same period there were two deaths in the Merchant Marine, one aged 18½ years and the other aged 42 years, and one in the Army, aged 19½ years.

All along we have been regarding diphtheria as a disease of childhood and the teaching has been that if children, particularly the pre-school groups, were immunized we would have little to fear from the disease. In the light of our recent experience in Nova Scotia we are not so sure of our position in this regard. The belief still holds in so far as mortality is con-

cerned but not necessarily with respect of morbidity. Of the civilian cases admitted to hospital in Halifax during the months referred to, approximately

TABLE 3

DEATHS ARRANGED ACCORDING TO AGE

Age 1½ years.....	1
" 2 ".....	1
" 3 ".....	1
" 4 ".....	3
" 5 ".....	2
" 6 ".....	3
" 8 ".....	2
" 10 ".....	1
" 11 ".....	1
" 13 ".....	2
" 16 ".....	2
" 18 ".....	1
" 19 ".....	1
" 38 ".....	1
" 54 ".....	1
	—
	23

35 per cent were 20 years of age or over and, of course, all of the cases from National Defence Forces were in persons 18 years of age or older.

Adult susceptibility was borne out by our experiences with the Schick test. We realize that the Schick test is a somewhat coarse measuring device, yet it was the only practical instrument at hand. Estimation of the antitoxin content of blood samples was out of the picture for the reason that we were not equipped to conduct such a procedure. Even if we had

been prepared to do so, we could not apply this process, for the simple reason that we were all too busy endeavouring to control the outbreak.

In a group of 405 Dalhousie University students, 59 per cent were found susceptible as measured by the Schick test. Of 243 normal-school students, 80 per cent were Schick-positive (sensitivity negative). Out of 250 civil servants tested almost 80 per cent were positive. Of 250 members of the Royal Canadian Air Force in barracks following an outbreak of diphtheria, 55 per cent were positive. In another barracks under similar conditions, 47 per cent of 465 men were found positive. Schick tests made on members of a trainees' camp indicated 71 per cent to be positive. Another group of 558 adults taken at random from a town of 3,600 persons showed 87 per cent positive to the test.

Some criticism has been made of the high percentage of these positive findings. It has been suggested that too many were read as positive and also that the toxin was too potent. In answer to this it may be said that all readings above referred to were made or supervised by trained public health officers of experience and consequently should be regarded as reliable. The toxin used was that made by the Connaught Laboratories, a preparation in which we have confidence.

In carrying out the Schick testing the instruction of our department was to perform not only Schick tests but also control tests. As a rule those under 8 years of age were not tested. One of our officers who was confronted with a great deal of work to be done in a short time raised this to 12 years without getting into difficulties. It is very important, particularly in the upper age groups, to use the control test. When we were faced with what appeared to be a positive Schick and a positive control test on the early reading and when the control faded within a few days, the Schick remained and passed through its various stages true to form, we took for granted that the person was in all probability susceptible and recommended immunization with dilute toxoid specially prepared for the immunization of reactors.

Our experience has been that where the whole procedure is properly controlled by men well-schooled in the use of the Schick test and in the administration of toxoid, very few reactions of any significance are encountered.

Just recently 212 of the normal-school students, having been given toxoid, were again Schick tested; 203 of these had been given three doses of liquid toxoid and 9 had received four doses of dilute toxoid specially prepared for the immunization of reactors. All were Schick negative with the exception of two. These two were from the group who received liquid toxoid.

At the same time 104 civil servants from among those who had received toxoid were Schick tested. Of these 45 had been given liquid toxoid and 59 dilute toxoid. Of those who received standard toxoid 85 per cent were negative and 75 per cent of those who received dilute toxoid were negative.

It may be of some interest to report that during the four months, 175,800 cc. of liquid toxoid, 4,000 cc. of dilute toxoid, and 3,250 packages of Schick test and control were distributed by the Department at a cost of \$13,947.50. In the same time 42,600,000 units of antitoxin were dispensed costing \$6,645.00.

This amount of toxoid alone would theoretically have been sufficient for the immunization of 85,200 persons. We know, however, that in practice this is not possible since a considerable part of it must necessarily be wasted. Even if half of it was so wasted there would be left sufficient for over 40,000. We do not as yet know how many persons were protected but we do know that the number must be very many thousands. The protection thus afforded such a large number of people more than justifies the money expended. One can only imagine what would have happened without this weapon.

A question arises as to the source of this virulent type of diphtheria. In answer we say we do not know. There are theories but it is not the intention here to indulge in speculation. That the infecting organism was virulent we know. The director of our laboratories states that the strain of the diphtheria bacillus isolated satisfied 75 per cent of the criteria for its identification as the Gravis strain of diphtheria.

Difficulties were met with in procuring toxoid inoculation for a sufficiently large percentage of the Halifax city population, particularly in the pre-school age group. These continue but it is hoped that during the coming summer this group will be well protected. No such difficulties were encountered in the rest of the province. As a matter of fact, before this outbreak a much better state of affairs prevailed with respect of toxoiding in sections outside the capital city than in it. With the organization in Halifax of a full-time health department, now in progress, it is felt that definite advances will ensue.

As intimated in the beginning, this account must not in any sense of the word be considered a complete story of the recent outbreak of diphtheria in Nova Scotia. Certain detailed information, not yet available, will be brought forth by our medical officers when time permits. When these data are assembled there will result a valuable contribution to our present knowledge regarding this disease and its behaviour.

## CONCLUSIONS

1. A preliminary account is here given of an outbreak of diphtheria in Nova Scotia in the autumn of 1940.
2. It occurred at a time and under conditions which increased the difficulties encountered in the work of control.
3. An astonishingly large number of adults were attacked.
4. A surprisingly high percentage of adults were found susceptible as measured by the Schick test.
5. Diphtheria should be considered an adult disease as well as a childhood one.
6. When the procedure is properly controlled, adults can be successfully immunized just as children can be.
7. Whereas the adult case rate was high, the mortality rate here, while not inconsiderable, was much lower than that in children.

# Convalescent Serum in the Treatment of Poliomyelitis\*

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**D**URING the epidemic of poliomyelitis in Toronto in 1937 an opportunity was provided to study the efficacy of serum therapy. The study began September 16th, after the peak of the epidemic, and extended until November 29th, a period of six weeks. The patients in this study were carefully examined and were free from paralysis when the serum was given. Alternate patients were chosen, and forty-five were given 50 c.c. of convalescent serum† intramuscularly and forty-seven did not receive any serum. Table 1 shows the relation between the time that treatment was given and the duration of the symptoms. No significant difference can be seen between the two groups.

TABLE 1  
 TREATMENT ACCORDING TO DURATION OF SYMPTOMS

Duration of Symptoms	Number Receiving Serum	Number Not Receiving Serum
1 day	21	21
2 days	12	15
3 days	5	7
4 days	5	1
5 days and over	2	2
Not stated	—	1
	45	47
Number $\bar{c}$ paralysis	14	15
Per cent $\bar{c}$ paralysis	31.1	31.9

The children were examined by one of us (W.A.H.) approximately one week after admission and in certain doubtful cases were reexamined at a later date. The paralysis was classified as severe, moderate, and mild. The results of treatment are given in table 2. There is a slight but probably not significant difference between the two groups in those severely paralysed: 2.2 per cent in those given serum compared with 8.5 per cent in the controlled group. Very little difference could be seen between those cases where paralysis was considered as moderate and severe: 13.3 per cent in those given serum and 17 per cent in the controlled group. No difference could be

\*From the wards and laboratories of the Hospital for Sick Children, Department of Paediatrics, University of Toronto, and the Connaught Laboratories.

†The serum was pooled from paralytic cases who had suffered their infection some years before.



TABLE 2  
CASES OF PARALYSIS CLASSIFIED BY DEGREE OF PARALYSIS  
AND PERCENTAGE OF TOTAL CASES

	Receiving Serum		Not Receiving Serum	
	No.	%	No.	%
Died	1	2	1	2
Severe	1	2	4	8
Moderate	5	11	4	8
Slight	7	15	6	12

determined between those suffering any form of paralysis: 31.1 per cent in those receiving serum and 31.9 per cent in the controlled group.

#### CONCLUSION

The results of this controlled study would indicate that serum in the dosages given was not of value in preventing paralysis in poliomyelitis.

## The Schick Test in Adults

G. D. W. CAMERON, M.D., C.M., D.P.H.

*Chief, Laboratory of Hygiene*

*Department of Pensions and National Health, Ottawa, Canada*

THE results, here reported, of determining the diphtheria antitoxin content of the blood of a group of adults on whom Schick tests were performed indicate the probability that approximately half the adult population possess less than the generally accepted minimal amount of diphtheria antitoxin necessary to protect against an attack of diphtheria. The use of the Schick test for the purpose of selecting these non-immunes may well become a matter of great importance at the present time. For this reason, the following information is presented with the hope that it may be of some assistance to those charged with the task of protecting adults against diphtheria.

A group of 139 people was chosen at random. Their ages ranged from 18 to 61 years, with four-fifths falling in the 20-to-49 group. Before performing the Schick test a sample of blood was obtained from each person. These were titrated for diphtheria antitoxin using Fraser's (1) method. As a first step, each sample was tested for  $1/500$  and  $1/100$  of a unit of antitoxin per c.c. In some cases these were repeated as a check on the method and in others, where the titre fell between the levels mentioned, the tests were repeated to determine the approximate value.

The skin of both forearms was used for the Schick tests. There was inserted intracutaneously in the right arm  $1/10$  of a c.c. of the new Schick toxin described by Taylor and Moloney (2). On the left arm a control test was performed. Thus each individual, after withdrawal of a sample of blood for antitoxin titration, received in the right arm Schick toxin and in the left arm the control test. Reactions were read on each of the first three days in most cases. All were read on the fifth day.

Of the 139 persons whose blood was titrated for diphtheria antitoxin content, 68 possessed less than  $1/500$  of a unit per c.c.; 58 showed a titre of more than  $1/100$  of a unit, and the remaining 13 had between  $1/500$  and  $1/100$  of a unit. If attention is directed to the last section of table I, where the data obtained five days after insertion of the test are recorded, it will be seen that 66 out of 68 of those possessing less than  $1/500$  of a unit were frankly Schick positive; one was a doubtful positive, and only one was a doubtful negative. In contrast none of those with  $1/500$  of a unit or more was positive. Our conclusion from this evidence is that the Schick test, under the conditions in which we were working, differentiates in nearly every case between those with  $1/500$  of a unit of antitoxin or more and those with less than this minimum. This division was used in compiling both tables I and II.

If the above conclusion is accepted, then it is of interest to examine the remainder of table I in order to see what success is to be expected from readings made earlier than the fifth day because such a procedure may become

imperative in an emergency. Confining our attention for the present to those with less than 1/500 of a unit it will be seen that, after 24 hours, 81 per cent were frankly Schick positive and 5.2 per cent were doubtful positives. At the

TABLE I

SCHICK-TEST READINGS MADE AT 1, 2, 3 AND 5-DAY INTERVALS ON PERSONS WITH LESS THAN 1/500 AND WITH 1/500 OF A UNIT OR MORE OF DIPHTHERIA ANTITOXIN PER C.C. OF BLOOD

Interval	1 day				2 days				3 days				5 days			
	<1/500		1/500 or >		<1/500		1/500 or >		<1/500		1/500 or >		<1/500		1/500 or >	
	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%
READING:																
Frank Positive.....	47	81.0	1	1.6	58	90.6	.	...	50	94.3	.	...	66	97.0	.	...
Doubtful Positive..	3	5.2	.	...	2	3.1	.	...	2	3.8	1	1.8	1	1.5	.	...
Frank Negative....	3	5.2	29	46.0	1	1.6	43	60.5	.	...	35	63.6	.	...	53	76.8
Doubtful Negative..	.	...	10	15.9	.	...	6	8.5	.	...	1	1.8	1	1.5	7	10.1
Doubtful.....	5	8.6	23	36.5	3	4.7	22	31.0	1	1.9	18	32.7	.	...	9	13.0
Total.....	58	100.0	63	100.0	64	100.0	71	100.0	53	100.0	55	99.9	68	100.0	69	99.9

TABLE IA

READINGS OBTAINED 1, 2, 3, AND 5 DAYS AFTER TEST WITH NEW AND OLD SCHICK TOXINS OF PERSONS WITH <1/500 AND WITH 1/500 OR > DIPHTHERIA ANTITOXIN PER C.C.

Interval	1 day								2 days							
	<1/500				1/500 or >				<1/500				1/500 or >			
	New		Old		New		Old		New		Old		New		Old	
READING	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Frank Positive.....	47	81.0	42	72.4	1	1.6	1	1.6	58	90.6	50	78.1	..	..	2	2.8
Doubtful Positive.....	3	5.2	4	6.9	..	..	1	1.6	2	3.1	4	6.3	..	..	2	2.8
Frank Negative.....	3	5.2	6	10.3	29	46.0	23	36.5	1	1.6	7	10.9	43	60.5	36	50.7
Doubtful Negative.....	..	..	..	..	10	15.9	..	..	..	..	..	..	6	8.5	..	..
Doubtful.....	5	8.6	6	10.3	23	36.5	38	60.3	3	4.7	3	4.7	22	31.0	31	43.7
Totals.....	58		58		63		63		64		64		71		71	

Interval	3 days								5 days							
	<1/500				1/500 or >				<1/500				1/500 or >			
	New		Old		New		Old		New		Old		New		Old	
READING	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Frank Positive.....	50	94.3	49	92.4	..	..	1	1.8	66	97.0	64	94.1	..	..	1	1.5
Doubtful Positive.....	2	3.8	2	3.8	1	1.8	..	..	1	1.5	..	..	..	..	2	3.0
Frank Negative.....	..	..	1	1.9	35	63.6	31	56.4	..	..	1	1.5	53	76.8	41	59.4
Doubtful Negative.....	..	..	..	..	1	1.8	1	1.8	1	1.5	..	..	7	10.1	12	17.3
Doubtful.....	1	1.9	1	1.9	18	32.7	22	40.0	..	..	3	4.4	9	13.0	13	18.8
Totals.....	53		53		55		55		68		68		69		69	

TABLE II

REACTIONS TO THE CONTROL TEST 1, 2, 3 AND 5 DAYS AFTER INOCULATION IN PERSONS HAVING LESS THAN 1/500 UNIT AND 1/500 UNIT OR MORE ANTITOXIN PER C.C. OF BLOOD

Interval	1 day				2 days				3 days				5 days			
	<1/500		1/500 or >		<1/500		1/500 or >		<1/500		1/500 or >		<1/500		1/500 or >	
	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%
REACTION:																
Red 1 cm. or > ....	3	5.2	21	33.3	5	7.8	27	38.0	3	5.7	18	32.7	1	1.5	11	15.9
Pale 1 cm. or > ....	0	...	0	...	0	...	0	...	0	...	1	1.8	1	1.5	11	15.9
<1 cm. ....	10	17.2	14	22.2	2	3.1	5	7.0	3	5.7	4	7.3	5	7.4	6	8.7
Clear. ....	45	77.6	28	44.4	57	89.1	39	54.9	47	88.7	32	58.2	61	89.7	41	59.4
Total. ....	58	100.0	63	99.9	64	100.0	71	99.9	53	100.1	55	100.0	68	100.1	69	99.9

same time, 5.2 per cent were frankly negative, and 8.6 per cent were uninterpretable. Thus 5.2 per cent of the non-immune group would be missed and one would be in doubt about 13.8 per cent. After two days, readings were obtained on 64 of this group. The number whose reactions could be interpreted increased to 90.6 per cent with 3.1 per cent recorded as doubtful positives; 1.6 per cent as frank negatives, and 4.7 per cent uninterpretable. After three days, only 53 were read. Of these 50 were frankly Schick positive (94.3 per cent); 2 were doubtful positives (3.8 per cent), and only 1 was uninterpretable. As was mentioned above, the number which could be interpreted on the fifth day increased to 66 out of 68 read, or a rate of 97 per cent.

Turning our attention to the group possessing 1/500 of a unit of antitoxin per c.c. or more, we find that the number which could be interpreted as frankly negative increased from 29 out of 63 (46 per cent) after 24 hours to 53 out of 69 read (76.8 per cent) on the fifth day. It will be seen that the number in this group who showed doubtful or uninterpretable reactions is much higher than was found in the non-immune group.

Table IA shows the calculations for both old and new Schick toxins and brings out quite well the difference in the qualities of the two toxins.

The greater ease of interpretation of reactions in the case of non-immunes is explained in large part by the data contained in table II. Here it will be seen that, after 24 hours, only 3 out of 58 read (5.2 per cent) of the non-immune group showed a red reaction of one cm. or greater to the control test; 17.2 per cent showed reactions of varying intensity but less than one cm. in diameter. By the fifth day only 1 out of 68 of this group showed a strong reaction, with 5 showing minor reactions to the control test.

In contrast to the above, the group possessing 1/500 of a unit or more showed a much higher percentage of reactions to the control test. After 24 hours, 21 out of 63 of this group (33.3 per cent), gave red reactions one cm. or more in diameter. This rate increased, after 2 days, to 38 per cent with pronounced reactions. By the fifth day, only 11 out of 69 of this group (15.9 per cent) showed strong reactions.

The data in table II tend to support the generally held view that those who are usually spoken of as reactors are in most cases immune. However, it should be pointed out that at the time when Schick tests should be read for the purpose of recording those who are reactors\* to the dilute toxoid injection, namely, 24 to 48 hours after inserting the toxin and control, between 5.2 per cent (after 24 hours) and 7.8 per cent (after 48 hours) of the non-immunes also are reactors.

This information regarding reactions to the control test simply confirms an observation made by McKinnon and Ross (3) after a study of the results of testing several thousand school children in Toronto. The point to be stressed is that, while the majority of reactors to the control are in the group possessing 1/500 of a unit of antitoxin per c.c., it must be remembered that from 5 to 8 per cent of reactors are in the non-immune group. In certain circumstances it may be justifiable to ignore this group since it may be assumed that being reactors a number of them will respond sufficiently to the stimulus of the Schick test to become immune.

From the data presented it will be seen that using the new Schick toxin it was possible to pick out 66 out of 68 adult individuals whose blood contained less than 1/500 of a unit of diphtheria antitoxin per c.c. if the readings were made on the fifth day. If the interval between inoculation of the toxin and making the reading is reduced, the test becomes less accurate. Since the purpose of the test is to select those requiring immunization, it seems advisable to delay readings until at least the third day and preferably the fifth or even later. If in an emergency an early reading is attempted then every effort should be made to see the Schick negatives after the third day.

In conclusion it may be said that in our experience the Schick test serves to detect a very high proportion of those adults having a low diphtheria antitoxin titre in their blood. That this knowledge is of value is evidenced by the fact that approximately fifty per cent of adults do not require further treatment for the purpose of immunization.

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\*It is important to know which individuals react to dilute toxoid, should any of them subsequently require to be immunized with toxoid.

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### SERUM THERAPY IN POLIOMYELITIS

SERIOUS outbreaks of poliomyelitis are now occurring in Canada. By the third week of August more than 800 cases had been reported in the Western Provinces, chiefly Manitoba, and more than 100 cases in New Brunswick. In 1937 Ontario was visited by the most widespread outbreak in the history of that province, with 2,544 reported cases and 119 deaths. A excellent report was published by the Department of Health of Ontario presenting the findings of the Department's investigation. At sessions of the Canadian Medical Association and of the Canadian Public Health Association clinical and epidemiological papers were subsequently presented and it is regretted that some of these were not published. One related to the findings of a carefully controlled study of the use of serum from recovered poliomyelitis patients in the early treatment of cases at the Hospital for Sick Children, Toronto, under the direction of Dr. Alan Brown. In view of the importance of the findings, a summary has been prepared from the records and is published in this issue of the JOURNAL. It is not possible in the article to describe the method of controlling the observations but the most careful consideration was given by those conducting the study as to the best possible way of obtaining comparable conditions for observations. In view of the difficulty of appraising the value of serum therapy in poliomyelitis, the publication of these findings will be of value and may be particularly helpful at this time.

The study indicated that the treated group had as high an incidence of paralysis as the group which did not receive serum. This finding is in accord with observations made in the treatment of sixty-six adult cases treated at the Toronto General Hospital and included in the excellent report published by Hyland et al.(1) concerning the treatment of adult cases. Serum was given to twenty-six patients and thirty-two served as controls.

In a recent critical review of this subject, Faber (2) reviews the observations in which suitable controls were used. Reference is made to 1,745 patients, of whom 1,063 received serum and 682 served as controls. Of the treated group, 78.5 per cent recovered completely and of the control group, 74.9. The percentage of treated cases resulting fatally was often slightly higher than the percentage of deaths occurring in the control group. Faber

also reviews the reports of presumably favourable results, giving a number of reasons why the conclusion that serum was of value should be questioned. The conduct of adequately controlled observations is most difficult to achieve.

It would appear that there is little to support the opinion that serum therapy is of value. Those who are intensively studying virus diseases in the laboratory are definitely of the opinion that it is unreasonable to expect the administration of serum to be of value. They base their view on the known facts concerning the disease in experimental animals and on the fact that by the time the first symptoms and signs are observed the virus has already invaded the nervous system. It is not reasonable to consider that because convalescent serum from recovered measles patients is of value in preventing measles, serum from recovered poliomyelitis patients should be of value in preventing or modifying the course of poliomyelitis. The efficacy of measles serum depends on the presence of measles virus in the blood where antibody can neutralize the virus, if given soon after contact, and sufficiently in advance of clinical signs and symptoms. While virus neutralizing antibodies may effectively blockade virus in blood, lymph and tissue fluids, they cannot follow virus into infected cells and check its development therein. Signs and symptoms of any virus infection depend on destruction of infected cells for all viruses are obligatory intracellular parasites. Poliomyelitis virus has never been found in the blood or cerebrospinal fluid of human cases and all the evidence indicates that it travels along the axones in its spread into and within the central nervous system.

Although poliomyelitis neutralizing antibody can be demonstrated by suitable tests, it has not been found possible to measure exactly amounts present in different samples of serum. "The prevalence of irregularities or inconsistencies in results renders the neutralization test unsuitable for quantitative studies, such as variations in strains of virus, the relative potencies of sera and other such problems in which the conflicting results have led to controversial opinions"(3).

In the monkey, the only available experimental animal, neutralizing antibody does not protect against infection. If monkeys are inoculated with poliomyelitis virus which has been inactivated with formalin, they produce neutralizing antibody much more promptly than monkeys convalescing from paralytic infection, but in spite of this they show no immunity, even to intranasal inoculation of virus.

It is indeed unfortunate that physicians may feel that it is incumbent upon them to administer serum in cases of poliomyelitis, fearing criticism if the outcome of the case is unfavourable. One thing is certain: that only by carefully controlled observations such as those reported by the Hospital for Sick Children can the final answer to this most difficult question be obtained.

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# THE ASSOCIATION'S WORK DURING 1940-41

## (Part III)

### REPORT OF THE COMMITTEE ON FULL-TIME HEALTH SERVICES

THIS Committee was formed in 1939 to carry forward a study of the health organization in all municipalities having the services of a full-time medical officer of health. These municipalities include cities, towns, townships, county health units, and combined areas. The first enquiry related to the organization and activities of the departments during 1938. The data obtained present satisfactorily the health organization in the communities but data relating to appropriations for public health, hospital, and welfare services have been difficult to interpret. Although the questionnaire forms were thought to afford the opportunity for separating the various constituent expenditures for health, hospital, and welfare services, the complexity of many local situations has required numerous letters. In few municipalities can the desired information be obtained from the department of health. The board of education, the hospital board, the department of welfare, or the municipal treasurer must be consulted and prolonged delays have resulted in the inability of the Committee to publish its first report.

The report will deal with more than seventy-five health departments. It will present a survey of public health personnel, including their qualifications, and the form of organization in each municipality. The Committee realizes fully the danger of publishing per caput figures as relating to health, hospital, and welfare services, and every effort is being made to prevent inaccuracies due either to faulty or incomplete information or wrong interpretation.

It has been decided to conduct a similar study as relating to the year 1940. The forms have been revised and will be sent shortly to all the municipalities having a full-time medical officer of health. Such a biennial survey will provide the facts on which plans may be made for the extension of full-time health services through the cooperation of Provincial and Federal authorities.

Without question, the most urgent need in Canada in the public-health field is the thorough investigation of ways and means whereby the Federal Government may make grants-in-aid to the Provincial Governments for the purpose of advancing preventive medicine. The demonstration of what has been accomplished in the United States during the past three years following the provisions of the Social Security Act, indicates that Federal financial assistance has served to stimulate, and not to decrease, State and local response. Many millions of dollars of additional funds have been made available by State and municipal departments of health as a result of Federal assistance. It is recognized that until Dominion-Provincial relationships are clarified in regard to health and other national matters the way does not seem to be open for such a plan. The study of this Committee will, it is hoped, be of assistance in providing, in so far as public health is concerned, information which is essential in the consideration of such a fundamental question.

May 31, 1941.

R. D. DEFRIES, *Chairman.*

REPORT OF THE STUDY COMMITTEE OF THE PUBLIC HEALTH  
NURSING SECTION

I beg to submit the sixth annual report of the Study Committee of the Public Health Nursing Section.

Since the last annual meeting, nine months ago, the Study Committee has been inactive. Two sub-committees, however, under the convenership of Miss Elsie Hickey and Miss Marion Nash, have continued their work and will present reports of their activities at this session.

Certain recommendations presented for consideration by the Study Committee at the last annual meeting were deferred for later action because of the limited attendance at the Section meeting in Winnipeg. These are, therefore, presented again this morning for your consideration. If they meet with approval, it is suggested that they be embodied in a resolution to be forwarded to the Resolutions Committee of the Canadian Public Health Association:

That the Study Committee of the Canadian Public Health Association continue to survey the field from time to time to discover problems in need of study.

That in order to get best results and to prevent overlapping of effort, when problems for study are found, they should be carefully considered from all angles and then referred to the existing group best qualified to conduct such a study. If no adequate group exists, it may be advisable to appoint a sub-committee for the purpose.

It is further recommended that the Study Committee might also function as a central clearing station where a record of all public health studies under way in Canada could be kept on file and would be available for consultation by any group contemplating a study in this field. This should eliminate duplication of effort.

The adoption of these recommendations would clarify the objectives of your Study Committee, and it is hoped that actual progress may be reported to you at the next annual meeting.

MARY S. MATHEWSON, *Convener, Study Committee.*

## RECOMMENDATIONS REGARDING MINIMUM REQUIREMENTS FOR EMPLOYMENT IN THE FIELD OF PUBLIC HEALTH NURSING

*Prepared by the Subcommittee on Qualifications for Employment in  
Public Health Nursing  
Study Committee, Public Health Nursing Section  
Canadian Public Health Association*

### I. ACADEMIC QUALIFICATIONS

Staff Nurse, Supervisor, Assistant Director, Director.

Pass Matriculation

(Higher educational attainment is desirable.)

### II. PERSONAL QUALIFICATIONS

#### A. Staff Nurse

1. Good physical health, pleasing personality, emotional stability and sound character.
2. Good judgment.
3. An inquiring mind.
4. An understanding and sympathetic interest in people.
5. The ability to get along with people.
6. A well developed sense of responsibility.
7. Resourcefulness.
8. Tenacity of purpose with ability to compromise and not to antagonize.
9. Dependability.

#### B. Supervisor

As above.  
Qualities of leadership.  
Executive ability.

#### C. Assistant Director

As above. (Staff and supervisor.)  
Qualities of leadership.  
Marked executive ability.

#### D. Director

As above. (Staff and supervisor.)  
Marked leadership.  
Administrative ability.

### III. PROFESSIONAL QUALIFICATIONS

#### A. Staff Nurse

1. *That the applicant should hold*
  - (1) A diploma in nursing from a recognized hospital or university school of nursing.
  - (2) A certificate or diploma in public health nursing from a recognized university school or department.

N.B. These may be obtained from one and the same university.
2. That the applicant should be registered in the province or state where her

training was received and should be eligible for registration in the province where employment is sought.

3. That preparation for the field of public health nursing should be secured through:
  - (a) Three years of study in a hospital school of nursing followed by one year of special preparation in public health nursing,
  - or*
  - (b) A well-integrated training of between three and four years with emphasis upon preventive teaching throughout and including specific teaching in organized public health work.
4. That both (a) and (b) under 3 should give emphasis to the preventive and constructive aims of nursing through:
  - (1) *Student Health Service:*  
A personal application of the principles of preventive medicine.
  - (2) *Ward Practice:*  
An emphasis upon prevention in the following services: medicine, including syphilis and gonorrhoea, surgery, obstetrics (out-patients' department and hospital social work), children's, communicable diseases (preferably both acute and tuberculosis), psychiatric. In all of these services, mental as well as physical needs should be recognized in nursing care.
  - (3) *Didactic Teaching:*
    - (a) Health emphasis in the teaching of basic subjects such as medicine, surgery, obstetrics.
    - (b) A study of preventive medicine (lectures and laboratory), public health nursing, teaching procedure, social work, nutrition, oral hygiene, mental hygiene and psychology.
  - (4) *Community Contact:*
    - (a) Some contact with community health services in each of three years of undergraduate training.
    - (b) A minimum of three months of practice work including experience in municipal health department practice and visiting nursing: preferably experience in a rural field should be added.
5. That preparation for the practice of public health nursing should aim to develop in the student the qualities of initiative and independent thought.

#### **B. Supervisor**

1. Basic professional qualifications—same as for staff nurse.
2. A minimum of from two to four years of diversified experience.
3. At least one of these experiences to have been with a public health nursing agency where adequate supervision is provided.
4. A technical knowledge of the specific field to be supervised.
5. Special training in the field of supervision (both theoretical and practical) is desirable.

#### **C. Assistant Director**

1. Professional qualifications as outlined for a supervisor.
2. Satisfactory supervisory experience, preferably with more than one organization.
3. Additional post-graduate experience desirable.
4. Executive and administrative qualities.
5. A technical knowledge of the specific field.

**D. Director**

1. Preliminary professional qualifications as outlined for a supervisor and an assistant.
2. Satisfactory supervisory experience, preferably with more than one type of public health organization.
3. Additional post-graduate work.
4. Marked administrative qualities—a business ability is inherent.
5. A technical knowledge of the specific field.

**IV. NURSE WORKING ALONE**

1. Professional and academic qualifications as outlined for staff nurse, and in addition should have the ability to organize the community and an aptitude to work with lay and professional groups along health lines.
2. Must have had at least one year and preferably two years of closely supervised experience.

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In addition to these specific qualifications, your Committee recommends the following:

1. That attention be called to the possibility of securing preparation for the public health nursing field through the newer method outlined under recommendation 3-b, section III, although it is recognized, at the present time, facilities for this type of preparation are limited.
2. That consideration be given to the establishment of public health nursing internships. Internship is a plan whereby an inexperienced nurse immediately following her basic preparation in public health nursing would have an opportunity to spend from four to six months with an adequately supervised public health nursing agency. Because of the training and the intensive supervision, inherent in internship, salaries of interneers would be considerably less than salaries of regular staff.
3. That the Canadian Public Health Association prepare a health report form to be used by employing agencies when considering employment of new workers.
4. That the study committee of the Public Health Nursing Section of the Canadian Public Health Association be asked to draw up a suggested application form for use by employing agencies which would be suited to candidates with all types of public health nursing preparation.

May 31, 1941.

ELSIE HICKEY, *Chairman.*

## RECOMMANDATIONS CONCERNANT LES CONNAISSANCES REQUISES DES CANDIDATES AU TRAVAIL D'INFIRMIERES DE SANTE PUBLIQUE

### I. TITRES ACADEMIQUES.

Infirmière du personnel, Surveillante, Sous-directrice, Directrice.  
Diplôme.  
(Connaissances supérieures préférées).

### II. QUALITES PERSONNELLES.

#### A. Infirmière.

1. Bonne santé, personnalité agréable, stabilité émotionnelle et caractère solide.
2. Bon jugement.
3. Esprit de curiosité.
4. Compréhension et bienveillance pour les gens.
5. Entregent.
6. Conscience développée de ses responsabilités.
7. Esprit de ressource.
8. Ténacité d'opinions tempérée par l'habileté à faire des concessions et à ne pas froisser les autres.
9. Caractère sur lequel on peut compter.

#### B. Surveillante.

Tel que ci-dessus.  
Qualités de chef.  
Compétence exécutive marquée.

#### C. Sous-Directrice.

Tel que ci-dessus (administration et surveillance).  
Qualités de chef.  
Compétence exécutive marquée.

#### D. Directrice.

Tel que ci-dessus (administration et surveillance).  
Qualités marquées de chef.  
Compétence administrative.

### III. QUALITES PROFESSIONNELLES.

#### A. Infirmière.

1. La candidate devra présenter:—
  - (1) Un diplôme d'un hôpital reconnu ou d'une école universitaire pour les infirmières.
  - (2) Un certificat ou diplôme d'hygiène publique d'une école ou département reconnu d'université.  
N.B. Les deux peuvent avoir été conférés par la même université.
2. La candidate devra être inscrite au registre dans la province ou l'état où elle a fait ses études et devra être éligible à l'enregistrement dans la province où elle veut faire du service.
3. La préparation au service d'hygiène publique doit avoir été obtenue par:—
  - (a) Trois ans d'études dans une école hospitalière pour les infirmières,

complétés par un an de préparation spéciale au travail d'hygiène publique,  
ou

- (b) Une pratique intensive de trois ou quatre années dans laquelle grande importance a été donnée à l'enseignement des mesures de prévention y compris une éducation complète de la façon d'organiser le travail de la santé publique.
4. Les sections (a) et (b) du No. 3 mettant au premier rang les buts préventifs et créateurs de la fonction d'infirmière par:
  - (1) *Le service comme étudiant:*  
Application personnelle des principes de la médecine préventive.
  - (2) *La pratique hospitalière:*  
Travail particulier dans les services suivants: Médecine (y compris la syphilis et la blennorrhagie), la chirurgie, l'obstétrique (travail de dispensaire et de service social hospitalier), médecine infantile, maladies contagieuses (de préférence les maladies aiguës et la tuberculose), la psychiatrie. L'infirmière devrait être au courant des besoins mentaux comme physiques dans tous ces services.
  - (3) *Enseignement didactique:*
    - (a) Faire reposer sur l'hygiène publique l'enseignement des sujets de base comme la médecine, la chirurgie, l'obstétrique.
    - (b) L'étude de la médecine préventive (par les cours et le laboratoire), des devoirs de l'infirmière en hygiène publique, des méthodes d'enseignement, du service social, de la nutrition, de l'hygiène buccale, de l'hygiène mentale, de la psychologie.
  - (4) *Contacts de groupes:—*
    - (a) Avoir eu quelques contacts avec des services d'hygiène de groupes, chacune des trois années d'études.
    - (b) Trois mois de travail pratique au minimum y compris de l'expérience de la pratique hygiénique municipale et le travail d'infirmière visiteuse: ceci devrait inclure de préférence de l'expérience acquise dans les milieux ruraux.
5. Cette préparation à la pratique infirmière de santé publique devrait viser à développer chez l'étudiante les qualités d'initiative et de pensée libre.

#### B. Surveillante.

1. Qualités professionnelles de base: les mêmes que pour l'infirmière.
2. Au moins deux à quatre ans d'expérience variée.
3. Une expérience au moins au service infirmier de santé publique où la surveillance est complète.
4. La connaissance technique du champ spécial de surveillance.
5. Il est désirable de posséder une préparation spéciale au travail de surveillance (préparation théorique et pratique).

#### C. Sous-Directrice.

1. Qualités professionnelles comme ci-dessus.
2. Expérience satisfaisante du travail de surveillance, de préférence dans plus d'une association.
3. Expérience additionnelle de post-graduation désirable.
4. Qualités exécutives et administratives.
5. Connaissances techniques du champ spécifique.

#### D. Directrice.

1. Qualités professionnelles préliminaires telles que pour la Surveillante et la Sous-directrice.



2. Expérience suffisante de la surveillance, préalablement acquise dans plus qu'un type de travail de santé publique.
3. Travail additionnel comme post-graduée.
4. Qualités marquées dans le travail administratif, habileté d'affaires naturelle.
5. Connaissance technique du champ spécifique.

#### IV. L'INFIRMIERE ISOLEE.

1. Qualités professionnelles et académiques comme pour l'infirmière et, de plus, habileté à organiser le groupe dont elle fait partie et capacité de travailler en communion avec les groupements professionnels et laïques, conformément aux principes sanitaires.
2. Au moins un an et préférablement deux ans d'expérience dans un travail de surveillance sous direction rigoureuse.

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En plus des qualités susdites, votre comité recommande:—

1. D'attirer l'attention sur la possibilité d'obtenir une préparation au travail d'infirmière hygiéniste par la nouvelle méthode indiquée à la recommandation 3-b, Section III, quoique l'on doive reconnaître que pour le moment, les facilités de s'y conformer sont limitées.
2. D'étudier la possibilité de créer, pour les infirmières, des internats en Santé publique. Cet internat permettrait à une infirmière sans expérience, mais qui s'est préparée au travail de santé publique, de passer quatre à six mois en service dans une agence de santé publique sérieusement surveillée. A cause de l'instruction et de la surveillance intensive que comporte tout internat, les salaires des infirmières internes seraient moindres que ceux du personnel régulier.
3. La préparation par la *Canadian Public Health Association* d'une formule de rapport à l'usage des agences d'emploi pour l'engagement de nouvelles infirmières.
4. De prier la Section des Infirmières hygiénistes de la *Canadian Public Health Association* de rédiger une formule de demande d'inscription pour l'usage des agences d'emploi, laquelle devrait convenir à toutes les candidates quel que soit le type de leur préparation.

## REPORT OF THE COMMITTEE ON ARCHIVES

THE Committee on Archives reports with deep regret the death of the following members during the period from July 1, 1940, to May 31, 1941.

Dr. W. B. Almon, Medical Officer of Health for Halifax, Nova Scotia, until his retirement in 1939.

Dr. E. A. Barrette, Ministry of Health, Sherbrooke, Quebec.

Dr. O. L. Berdan, Medical Officer of Health, Strathroy, Ontario.

Dr. P. J. S. Bird, Mental Hospital, Weyburn, Saskatchewan.

Dr. G. W. O. Dowsley, Medical Officer of Health of Thorah Township, Beaverton, Ontario.

Dr. H. George Cameron, Mental Hospital, Weyburn, Saskatchewan.

Dr. F. F. Eaton, Medical Officer of Health, Truro, Nova Scotia.

Dr. J. A. Kane, Medical Officer of Health of Dack Township, Cobalt, Ontario.

Dr. Alphonse Lessard, Quebec, formerly Director of the Provincial Bureau of Health of Quebec.

Dr. J. W. S. McCullough, Toronto, Chief Inspector of Health of the Province of Ontario, until his retirement in 1935.

Dr. Donald McKay, Medical Officer of Health, Collingwood, Ontario.

Dr. W. F. McKay, Medical Officer of Health, Pender Island, British Columbia.

Dr. Allan MacLean, Epidemiologist and Assistant Professor of Hygiene and Public Health, Dalhousie University, Halifax, Nova Scotia.

Miss Jessie McNeil, Ministry of Health, Magdalen Islands, Quebec.

Mrs. Nelling, Ministry of Health, Ste. Martine, Quebec.

Dr. H. McG. Patterson, Medical Officer of Health, Rodney, Ontario.

Dr. J. F. Rigg, Medical Officer of Health of Niagara Town, Niagara-on-the-Lake, Ontario.

Dr. N. W. Rogers, Medical Officer of Health, Barrie, Ontario.

Dr. T. D. Rutherford, Medical Officer of Health of Burford Township, Burford, Ontario.

Dr. G. S. Sadler, Medical Officer of Health of the Townships of Bangor, Radcliffe and Raglan, Combermere, Ontario.

Dr. L. P. Savoie, Ministry of Health, Quebec, P.Q.

Mr. James Shepherd, Sanitary Inspector, Winnipeg, Manitoba.

Dr. A. A. J. Simpson, Medical Officer of Health of Ashfield Township, Kintail, Ontario.


May 31, 1941.

J. T. PHAIR, *Secretary*.

# PUBLIC HEALTH EDUCATION

TWO POSTERS PREPARED AND DISTRIBUTED BY THE DEPARTMENT OF HEALTH AND PUBLIC WELFARE OF MANITOBA

It has been felt for some time that many persons suffering from venereal disease have not been aware of the fact that free treatment is available or were not sure where to go to obtain it. In order to impress upon the public that early diagnosis is important and early treatment essential to the eradication of both syphilis and gonorrhoea, this poster has been prepared. Sturdily mounted in a black wood frame, with a glass face, it is held in place by special screw nails, driven through the frame into the wall. It was decided that framing was necessary to discourage defacement. The poster has been distributed to all health officers in Manitoba



POSTED BY AUTHORITY OF  
**DEPARTMENT OF HEALTH AND PUBLIC WELFARE**  
PROVINCE OF MANITOBA

**GONORRHEA**  
(A DOSE, OR CLAP)

**SYPHILIS**  
(SIF, PEK OR CHANCRE)

**BOTH DISEASES CAN BE AVOIDED  
BOTH DISEASES CAN BE CURED**

KNOW YOU ARE HEALTHY. DON'T JUST GUER.

If you think you have been exposed to Venereal Disease—DO NOT DELAY.  
GO TO A LICENSED PHYSICIAN or to YOUR HEALTH DEPARTMENT.

Sound Medical Advice Saves Money and Needless Suffering. Cure Depends on Skillful and Continuous Treatment.

BE GUIDED BY YOUR PHYSICIAN'S ADVICE.  
Beware of Advertising Quacks or Doctors and Specialists who claim to cure "Hereditary Debility" and "Private Diseases of Men and Women". "Patent Cures" are dangerous. Their purchase is a waste of money and they do not cure.

WHAT TO DO

IF YOU THINK YOU HAVE BEEN EXPOSED TO GONORRHEA OR SYPHILIS  
GO TO A PHYSICIAN AT ONCE. . . HIS ADVICE IS CONFIDENTIAL.

Write or call for free information at the

DEPARTMENT OF HEALTH & PUBLIC WELFARE, 320 Sherbrook St. or  
GOVERNMENT FREE CLINIC at ST. BONIFACE HOSPITAL  
OUT-PATIENT DEPARTMENT

## Your Child Needs..



**SMALLPOX VACCINE** — to prevent **SMALLPOX**

**DIPHTHERIA TOXOID** — to prevent **DIPHTHERIA**

**SCARLET FEVER TOXIN** —  
to help protect against **SCARLET FEVER**

**WHOOPIING COUGH VACCINE** —  
to help protect against **WHOOPIING COUGH**

## ..DO YOU KNOW..

.... that your child should have these treatments before the age of one year -- or earlier. Whooping cough vaccine is of most value when given before the age of six months.



**...See your Doctor**

DEPARTMENT OF HEALTH AND PUBLIC WELFARE - 320 Sherbrook Street, Winnipeg

and given out in quantity to city health departments. It is being placed in public lavatories, lavatories in beer parlours, and other suitable locations.

The immunization poster was prepared as the result of a suggestion from one of the rural health officers that information of this sort should be brought more forcibly to the attention of the public than is possible by the distribution of literature alone. Each health officer in the province was sent a number of the posters, with the request that they be tacked up in schools, town halls, community halls, offices, etc. The past spring saw a substantial increase in the number of immunization clinics throughout the province, and posters and literature accounted to a certain extent for this success.—A. Marguerite Swan, M.D., D.P.H., Director, Division of Health Education.

## BOOKS AND REPORTS

**The Parasites of Man.** By Thomas W. M. Cameron. Toronto: The University of Toronto Press, 1940. 182 pages, 61 illustrations. \$3.00.

THIS textbook is based on the course of animal parasitology given to medical students in McGill University and, as pointed out in the preface, "is intended for the medical man who practises in the English-speaking temperate and sub-tropical zones." The human parasites endemic in North America and Great Britain are dealt with at some length although general remarks are also included on the more important tropical forms which may be carried to temperate regions. There are sections on Protozoa, Helminths, Leeches, Arthropods and Technique, as well as a short bibliography and index.

The text is written in simple language, and structural details of the parasites, of little interest to physicians, are omitted. Different species are illustrated by a number of excellent plates, many of them photographs, and there are charts showing the life cycles. The section on arthropods has some fine illustrations published by the late Eric Hearle, as well as original drawings. Text references to the plates, along with additional explanatory labels, might have increased their usefulness. The differential diagnosis of the intestinal protozoa is illustrated in a chart. This or some other method might well have been used to summarize the differences between the parasites in the other groups. Although the subject matter is reduced to a minimum, its use would have been simplified by more sub-headings.

Some physicians will scarcely agree that *Giardia lamblia* is non-pathogenic, and some will prefer a swab and saline to a smear for the diagnosis of *Trichomonas vaginalis*. No mention is made of the possible significance of blood transfusions in the spread of

malaria, and although it is stated that *Plasmodium vivax* is the only species of malaria used for treating G.P.I. cases, there is at least one hospital in Canada which has been using *P. malariae*.

References are reduced to a minimum for the sake of brevity, but in some cases at the loss of valuable historical information. Moreover, as a Canadian textbook, those discoveries made in this country might have been given more prominence.

These are minor points and for the physician who wishes to have available a concise account of parasites found on this continent this book can be recommended.

A. Murray Fallis

**Mosquito Control.** By William B. Herms and Harold F. Gray. New York: The Commonwealth Fund, 1940. 317 pages. \$3.50.

THIS book was written for physicians, entomologists, engineers and others engaged in mosquito control, or for those who are organizing control projects. It is "intended as a practical handbook on mosquito abatement".

General as well as detailed information is presented, regarding the economic importance of mosquitoes, necessary legislation for instituting abatement projects, governing bodies to be consulted, organization and personnel required for the project, and education of the public. The authors stress the latter, as the taxpayer is entitled to know how his money has been spent.

Other chapters discuss the importance of knowing the species and habits of the mosquitoes involved, methods of surveying the mosquito population and inspecting the breeding places, various abatement methods (drainage and reclamation of marshes—salt and fresh water—filling, pumping, flushing, use of oils and larvicides and methods of apply-

ing them), control by fish and other naturalistic means, and special features of control in rural and urban areas.

The authors emphasize the importance of knowing the species of mosquitoes and their habits, and implementing the control measures which are likely to be most practical, economical, effective and which, at the same time, will disturb the populations of the area, human or otherwise, as little as possible. The authors make it clear that in any abatement project the elimination of the breeding places of the mosquitoes, or reduction in the number and extent of them, is of primary concern. For example, too much stress should not be placed on the use of oil, which is a remedial rather than a preventive measure. Moreover, it is the toxic properties of the oil which destroy the larvae and pupae and not, as many believe, the shutting off of the air supply.

A short bibliography follows each chapter and another is given in the appendices. The appendices contain also a list of the malaria-transmitting anophelines, their geographical distribution and breeding habits, a classification of mosquitoes according to their larval habitats, and a classification of mosquito abatement methods.

Public health officers, engineers and others interested in mosquito abatement should find this a useful book. It is written by authorities who are pioneers in this field and who back up their information with results from their own practical experience.

A. Murray Fallis

**The Principles of Dairying.** By Henry F. Judkins. Third edition, revised by Merrill J. Mack. New York: John Wiley & Sons, Inc., 1941. 315 pages. \$3.00.

THIS, the second revision of "Judkins", was done by M. J. Mack. Throughout two revisions there has been but little change in the organization of the subject material. It is

frankly a textbook for freshmen without a background of mathematics, physics, chemistry and biology. The limitations thus necessarily imposed are not lessened by the encompassment within 315 pages of a survey of the whole field of dairy technology (other than the animal husbandry aspects). The emphasis is largely on the mechanics of dairying. It is not to be expected, therefore, that it will have an extended orbit as a reference book.

It is well printed and bound and pleasing in appearance. Reproduction of photographs and charts is good and no typographical errors were noted.

Unhappily many loose expressions and even inaccuracies occur. Two examples will suffice. "... bacteria may divide once each half-hour; this means that in twenty-four hours one organism might have 17,000,000 descendants." "The concentration of the replaceable hydrogen (or hydrogen ions) is commonly expressed as pH . . . ."

H. R. Thornton

**Diseases Transmitted from Animals to Man.** By Thomas G. Hill. Second edition. Springfield, Illinois: Charles C Thomas, 1940. 403 pages. \$5.50.

THE advance in our knowledge of the diseases transmissible from animals to man is indicated by the need for a second edition of this book in eleven years. Several specialists, including such well-known men as Dyer, Faust, Huddleson, Kelser, McCoy, Meyer, Mohler and others, have assisted in the preparation of this edition by revising and rewriting many chapters.

The book is divided into five sections in which diseases of domestic animals and birds; rodent affections; human diseases spread by animals; animals as passive carriers of disease organisms; and a review of the role played by each animal in the spread of disease are discussed. The information pertaining to the various

diseases although condensed is relatively complete, including a short but interesting historical account, an outline of their geographical distribution, and descriptions of the causative agent, the mode of transmission, and methods of prevention and control. It is interesting to note that the preventive aspects of the various diseases have been stressed throughout and much valuable epidemiological data are included in different chapters. The literature has been consulted extensively and a useful bibliography follows at the end of each chapter.

Veterinarians may be surprised that calftuberculosis vaccination as a means of preventing Bang's disease in cattle is not mentioned. The chapter on animal parasites might have included some remarks on cercarial dermatitis or "swimmers' itch" which has assumed some importance on this continent.

Many good illustrations and a large number of epidemiological tables, charts and maps add to the value of the book. It is written in a readable style, is published on excellent paper, and the very few typographical errors which are present can be eliminated in future editions.

Physicians, veterinarians and others engaged in public health work will want a copy of this useful book which has been written, according to the author, "with each of them in mind; to afford a common meeting ground where each might understand the problem of the other".

A. Murray Fallis

**Preface to Eugenics.** By Frederick Osborn. New York: Harper & Brothers, 1940. 312 pages. \$3.75.

THIS book is written by a distinguished American scholar, a student of population problems, an authority on anthropology and a leader in the American Eugenics Society. It begins with a consideration of negative eugenics, and the duty of doctors and public health authorities to reduce the number of defectives is stressed.

"The medical professions will be forced to include human genetics as part of its armamentarium in the fight to improve the public health. And public opinion must be brought to realize the great reduction in human misery and suffering and the great social economies which would result from an intelligent concerted effort to cut down on the incidence of hereditary disability." "Great results can be achieved—it should be possible to reduce the number of feeble-minded by 150,000 a generation for several generations, and the number of schizophrenics and manic-depressives by possibly a like amount." "With the further advance of the science of human heredity, at last the incidence of serious hereditary disabilities will be only that which results from those unpredictable mutations which cause defect to appear in previously uncontaminated human strains."

Every student of population trends knows that western civilization is facing a biological crisis, which will become clear to the man on the street before the youngest generation now living has passed away. The long era of expanding population is drawing to a close. Birth rates have been falling for some generations. The time is not distant when death rates will start their upward climb, for an ageing population must inevitably reach the stage where the number of deaths tends to approximate the number of births. Ultimately we will have a declining population. The man on the street will be interested then, and so will the politician. The cry will be for "more babies". Eugenics hopes to change that cry to "more and better babies", which is positive eugenics.

"Preface to Eugenics" is a reasoned argument for voluntary parenthood as an instrument of population policy and this involves widespread diffusion of the knowledge of birth control, in order to control involuntary parenthood. It is a plea to assure and safeguard in our democracy the right

of people to have or not to have children, along with the right to have freedom of speech and freedom of worship. Dr. Osborn seems to think that the Catholic church will ultimately sanction birth control upon which the success of these policies rests. He endorses the principles of population control as worked out in Sweden where the policy of services to children is preferred to the easy political policy of allowances to parents, which could only result in placing a premium upon the number of children, and would operate with dysgenic effects. It is a plea for policies which would encourage abler stocks of people in every section of the country and every social class, rich or poor, to have more children than their irresponsible neighbors.

"Preface to Eugenics" is recommended to all physicians who desire to be informed as to the trend of the eugenics movement. It should be required reading by all medical graduates who are proceeding to a degree in public health. It is a book for the student of political economy, and for everyone who is interested in the future of man.

W. L. Hutton

**Start Today!—Your Guide to Physical Fitness.** By C. Ward Crampton. New York: A. S. Barnes and Company, 1941. 217 pages. \$1.75.

WRITTEN in reply to the challenge made by Morris Fishbein of the American Medical Association that "the results of the examinations made by the selective service boards and the induction boards are a challenge to the medical profession, to the social scientists, the physical educators, the public health officers and all of those concerned in the United States with the physical improvement of our population," the book defines physical fitness, stresses the necessity of a complete physical examination and its importance in regard to health, and describes various exercises, illustrating them with clever line drawings.

The "daily dozen" has become the "special seven" and the sprightly descriptions of these exercises should be sufficient to arouse the laziest from his lethargy and start him on his way to physical fitness. A chapter is devoted to diet and its relationship to health—"50 per cent of Americans are on a deficiency diet."

The book is written in a style attractive to layman and physical educator alike, and should prove to be of wide-spread interest.

A. Marguerite Swan

**Effective Living.** By C. E. Turner and Elizabeth McHose. Toronto: McAinsh & Company Limited, 1941. 432 pages, 164 illustrations. \$2.50.

THIS is a book which makes excellent reference material for teacher and senior high-school student alike, offering as it does many suggestions for the development of units of study in the higher grades. Easy to read, non-technical in terminology and authentic in its scientific information, its lucid style makes it of value to this particular group.

The book is divided into three main sections. The first, entitled "Effective Living for the Individual," is essentially a section on personal hygiene and physiology and is made up of seven separate units of study. The second, "Effective Living in the Family," stresses the family as a unit and discusses its importance from the point of view of mental hygiene as well as from that of the necessity of a healthful home environment. Heredity is dwelt on briefly. There are four units in this section. The third, called "Effective Living in the Community," deals with communicable disease control, sanitation and other community health problems, dividing the material into four units of study. Reference lists are given and each unit of study concludes by suggesting various problems and activities which might be undertaken.

Attractively bound and lavishly illustrated, this book would be a



valuable addition to a high school or normal school library.

A. Marguerite Swan

**Community Organization for Health Education.** *A report presented by the Committee on Community Organization for Health Education to the Public Health Education Section and the Health Officers Section of the American Public Health Association. New York: The American Public Health Association, 1941. 120 pages. Nine cents (American currency).\**

THIS is an excellent handbook of 120 pages which every health department, as well as all voluntary agencies in the health field, should be sure to obtain. The aim of the book is to point out that all health agencies in a given community should cooperate to their fullest extent in their program of health education; the official agencies, the schools, and the voluntary agencies, each have special contributions to make, but the work of each can be more effective when they are working together through a program which has been definitely planned.

The descriptive material for the

*\*Thirty cents (American currency) for lots of twenty copies. This covers the cost of wrapping and the package is sent collect.*

book was obtained from three State Health Departments, twelve county departments and sixteen cities—in widely separated parts of the United States. The programs are outlined showing how various problems were attacked and solved successfully because of the excellent cooperation between the agencies concerned.

Canadian health departments should avail themselves of the opportunity to obtain this splendid piece of work.

A. Marguerite Swan

**Meat Hygiene.** *By Richard Edelman. Revised by John R. Mohler and Adolph Eichhorn. Seventh edition, 1939. Philadelphia: Lea & Febiger. 463 pages, illustrated with 157 engravings and 5 coloured plates. \$5.50.*

THIS standard textbook on meat hygiene needs no new commendation. The seventh edition incorporates the amendments made in the United States Federal Meat Inspection System and brings the work fully up-to-date. A new section has been added dealing with the ductless glands. Dr. Mohler and Dr. Eichhorn continue to render a most valuable service in making available to health authorities a thoroughly reliable textbook on this important subject.

R. D. Defries

## INDUSTRIAL HYGIENE ABSTRACTS

### The Growing Recognition of the Industrial Doctor

THE traditional concept of medicine's usefulness to industry, i.e. competent surgical treatment of injuries actually or likely to become compensable, is being constantly modified. Today occupational disease legislation demands that industry protect its employees not against accidents alone but against any harmful health experience associated with work as a cause. Prevention has become the cardinal principle for

lowering the incidence of disability suffered by workmen. The first objective of all industrial health activity is to promote the physical welfare of every worker. The proved values of such a program have been responsible for the growth of interest in industrial health and for increasing demands on physicians to supply medical services to industry. In this article the author discusses the importance of the recent step taken in Great Britain, namely, according state recognition to preventive medi-

cine as a function of work's management.

Great Britain pioneered the way in some phases of industrial medicine. An early landmark was the setting up in 1915 of the Health of Munitions Workers Committee. After the last war, the Industrial Fatigue Research Board, now the Industrial Health Research Board, continued the scientific study of the human factor in industry. The Factories Act of 1937 required reasonable arrangements for medical supervision in certain factories, and the Factories (Medical and Welfare Services) Order, dated July 16, 1940, carried this still further by requiring employers to engage a whole-time or part-time doctor or nurse or both wherever the Factory Department of the Home Office considered such appointment necessary. The British Government is realizing that industrial fatigue and incapacity in factories can be prevented or can be dealt with at its beginnings only by providing a reasonable standard of medical health in factories.

Conditions affecting workers in the United States and Canada are not entirely comparable with those in Great Britain. On this continent the absence of national health insurance has resulted in many employers seeing the wisdom of establishing health services for their workers. An indication of recent stimulated interest may be found in the activity of the Council on Industrial Health in the United States who have defined the scope of a properly administered health program as follows: (1) prevent disease or injury in industry by the establishment of proper control over industrial environment, (2) promote restoration to health and earning capacity as promptly as possible after industrial injury or disease, (3) conserve the health of workmen through physical supervision and education.

The Canadian Doctor, January, 1941, p. 27.

### **Pneumoconiosis due to Silicates**

VARIOUS suggestions have been made as to the role of the silicate constituents of certain dusts. During the last eight or nine years engineering and medical observations have been made by the Division of Industrial Hygiene of the National Institute of Health in several industries where workmen are exposed only to silicate dusts. In this article the author reviews briefly the results of these observations, including the characteristics of the pneumoconiosis observed and the circumstances under which it developed, and points out features which need control to prevent the disease from developing.

The dusts studied were talc and slate, asbestos, mica, feldspar and kaolin. In most cases the concentration of silicate dust was high. Details of the investigations are presented.

Investigation has shown that all of the above silicate dusts give an inert reaction, a more benign biologic response than that induced by quartz and other forms of free silica but more severe than that by such dusts as calcite. It appeared that dusts giving an inert reaction should be regarded as potentially harmful although not as dangerous as those producing a proliferative reaction. With the exception of asbestos and mica, it would appear that silicates do not produce disabling lung disease unless complicated by tuberculosis. Symptoms and physical signs of mica-induced pneumoconiosis did not differ from those of silicosis. Radiographic findings were, however, characteristic.

The clinical characteristics of asbestosis differ considerably from those of silicosis. In the studies of the other silicates by the Public Health Service, clinico-radiographic findings differing from silicosis are not as striking. Signs and symptoms are essentially the same as those of classical silicosis, and if the pneumoconiosis due to some of these silicates is complicated by tuberculosis, the clinical and

radiographic picture is similar to silicosis complicated by tuberculosis. Feldspar miners have a pegmatite exposure and show a pneumoconiosis similar to that observed in some granite workers, i.e. silicosis.

The author briefly discusses engineering and medical control. He stresses the importance of instituting measures for the prevention of the dispersion of dust similar to the methods used for the control of silicosis. The value of physical examinations conducted by a qualified physician also is shown.

W. C. Dreessen. Transactions of the third annual meeting of the National Conference of Governmental Industrial Hygienists, Bethesda, Maryland, April 30-May 2, 1940, p. 141.

### Medical Supervision in Factories

In Britain, The Factories (Medical and Welfare Services) Order, dated July 16, 1940, issued by the Minister of Labour and National Service, provides for medical supervision in certain factories. The occupiers of such factories (largely munition) may be required by a Factory Inspector authorized by the Minister to make arrangements for the whole-or part-time employment of such numbers of medical practitioners, nurses and supervisory officers as the inspector may specify for one or more of the following services: (a) medical supervision of persons employed in the factory, (b) nursing and first-aid services, (c) supervision of the welfare of such persons.

In November, 1940, the Factory Department of the Ministry of Labour and National Service issued a memorandum explaining the order of July, 1940. It sets forth the objects of medical supervision in factories and the duties of the medical men in charge. Medical supervision in factories is not an innovation but in recent years its scope has been con-

siderably widened. Its main purpose is to maintain the health of the worker at full efficiency. In addition it aims, in conjunction with medical services outside the factory, to prevent sickness and alleviate its consequences and to minimize the effect of any injury that may be caused by accident. Such service benefits both the individual worker and industry.

The duties of the Works Medical Officer are outlined briefly as follows: (1) to organize and supervise first-aid services for the treatment of injury and sickness, (2) to examine medically, workers who are referred to him or who consult him, or who are about to be employed in processes involving a specific health hazard; (3) to determine the condition of persons returning from illness; (4) to advise on matters of general hygiene within the factory; (5) to cooperate with management and outside welfare authorities on all matters affecting the health of the workpeople; (6) to create and maintain an effective liaison with outside health services, namely, medical practitioners, hospital services and local authorities; (7) to keep adequate records in confidential form; (8) to promote education of the workpeople in matters of general and personal hygiene; (9) to assist in his professional capacity in the A.R.P. Services of the factory and in the training of A.R.P. personnel.

The memorandum discusses the necessity and value of each of these duties in its relation to the general program. It stresses the importance of the status given to the Works Medical Officer and the necessity for him to familiarize himself with all the work processes in the factory.

Memorandum on Medical Supervision in Factories. Ministry of Labour and National Service, Factory Department. November 1940. Form 327. London: His Majesty's Stationery Office. 8 pages.

